Lesson 75 - Cancers, Tumors

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1. Introduction

There are many factors involved that may contribute to the development of cancer. There are

carcinogens in the environment, tobacco, alcohol, and in processed foods. There are cancer-causing toxins in drugs, X rays, and even in the cancer therapies themselves.

You also may develop cancer in the absence of these extraneous factors. This condition begins when yon first become enervated and your body cannot cope with endogenous and exogenous toxins. These toxins accumulate, and if no corrections are made, eventually progress through the seven stages of disease terminating in the seventh stage—cancer.

Since all of these factors are equally important, we will examine them all in this lesson. It is important for you to be aware of the harmful results from all of these toxic substances. When you know the truth, you will be able to make rational decisions that will result in health.

2. The History Of Cancer

Cancer is a disease of civilization. And yet it is a very old disease. Several million years ago a dinosaur could be found with bone cancer, as fossilized remains discovered in Wyoming have shown. Perhaps other forms of cancer existed in those remote times, but bones are the only remains of extinct animals and therefore give a record of bone cancer alone.

Cancer in the ancestral species of man is more than a million years old. Some traces of it have been found in an anthropoid unearthed in Java in 1891. In antiquity the oldest evidences of cancer are Egyptian and Indian. Bone cancer is identifiable in some mummies discovered in the Great Pyramid of Gizeh. The Edwin Papyrus (2500 B.C.), the Leyde Papyrus (1500 B.C.), and the Ebers Papyrus (1500 B.C.) describe symptoms of cancer and primitive forms of treatment, such as the use of the knife. From the Hindu epic, the *Ramayana*, we learn that arsenic pastes were administered as long ago as 500 B.C. as a treatment for cancerous growth. Writings attributed to Hippocrates (about 400 B.C.) describe many forms of the disease, among them cancer of the breast, uterus, stomach, skin, and rectum. From him we have inherited the term carcinoma (Greek *karkinos*, crab—the great veins sometimes surrounding the malady were compared to the claws of a crab). But treatment in those days were crude, employing caustic pastes and cautery, although Hippocrates had the wisdom to advocate *no* treatment for what he called accult cancer and which would nowadays be called deep-seated cancer.

Hippocrates set forth the humoral theory of disease, which was to form an integral part of medical history for centuries. According to him there were four humors—blood (from the heart), phlegm (from the head), yellow bile (from the liver), and black bile (from the spleen). If the four elements were not properly balanced, bodily health would be impaired and illness would appear. Hippocrates believed that the black bile was mainly responsible for cancer. His theory of humors, although erroneous, demonstrated clearly his certainty that illness originated within the body, in contrast to beliefs in the magical, diabolical, or divine interference with human health.

In the first century A.D., the Roman physician, Aurelius Cornelius Celsus, was the first to operate on cancer, and, during the operation, to ligate blood vessels. He knew about the invasion of distant sites by original cancer cells. He described the appearance of secondary tumors after the primary one had been removed, and he was aware that certain tumors were painless and silent until they grew large enough to ulcerate.

Galen advocated the black bile theory of cancer, and his considerable influence blocked discoveries about the nature of the disease until after the Renaissance. Nevertheless he was the first to correlate psychosomatic problems and emotions with an understanding of cancer. In his treatise on tumors he

wrote that melancholic women are more prone to breast cancer than sanguine women.

Arabian physicians of the twelfth century, Avenzoar and Averrhoes, used esophageal sounds to diagnose cancer of the throat and to improve bleeding of patients whose esophagus was obstructed by cancer. Their clinical description of stomach and esophageal cancer is accurate. Another surgeon of the Renaissance, Fallopius (1523-1562), used caustic pastes instead of surgery in the treatment of cancer. It is perhaps worthy of note that there has been a return to this crude use of caustic pastes, as in the method of chemosurgery advocated by Dr. Frederic Edward Mohs in certain cases of face, head, and neck cancer.

The difference between benign and malignant tumors was clarified shortly after Hildanaus's time by Marcus Arelius Severinus. In the eighteenth century the first cancer hospital was founded in Reims, France. At that time cancer was considered to be contagious and persons sick with various forms of the disease were avoided like lepers.

Discoveries were made in many directions during the latter part of the eighteenth century. The first experiments in animals were begun. Occupational cancer, in the form of scrotal cancer of chimney sweeps, was described (1775) by Percivall Potts.

Advanced knowledge in pathology came through the work of John Hunter, Rene Laennec, and Marie Francois Bichat, who espoused a concept of cells as basic units of tumors. The French gynecologist, Joseph Recamier, who spoke of generalized cancer, described invasion of the bloodstream by cancer cells. It was he who coined the term mestastasis to describe the establishment of secondary cancer centers in the body as a result of the, transportation of cancer cells by lymph and blood.

Toward the end of the nineteenth century in Germany, Christian Billroth, Alexander von Winiwater, Wilhelm Freund, Themistokles Gluck and others began to perform cancer operations on a larger scale than ever before. Hysterectomy and laryngectomy became common.

Early in the twentieth century the American surgeon, William Halsted, set forth his surgical principle in the treatment of cancer, namely, that the lesion, together with the regional lymph nodes, should be removed in an attempt to prevent metastases. This principle is best illustrated in his radical mastectomy operation for cancer of the breast. His method is still widely practiced today and is responsible for the unnecessary mutilation of many women.

In 1895, Roentgen discovered some unknown rays which were to become very widely used in the diagnosis and treatment of cancer. As he was working in his laboratory, experimenting with a vacuum tube through which an electric current passed, he noticed that a nearly piece of paper coated with barium platino-cyanide was giving out an unexpected glow. He placed different materials between the vacuum tube and the treated paper and found that some substances stopped the glow while others did not. He had the proof that certain rays emanated from the vacuum tube, and that denser materials interrupted them but lighter ones did not. The rays are sometimes known as roentgen rays, but more often by the name he gave them, X rays.

Three years later, the two French scientists, Pierre and Marie Curie, made another discovery when they found a new element in the ore pitchblende, which had already yielded uranium. This element they named radium. They found that the radiations emitted by radium are much more intense than those which uranium was already known to discharge. Mane Curie was also the first victim of the study of radium, which kills but never heals. She developed anemia form protracted exposure incident to her long years of research with this radioactive element.

Both X rays and radium are dangerous. Shortly after the discovery of X rays, a man employed in a factory making roentgen tubes developed an ulcer in an arm, the arm had to be amputated, and he finally died after a recurrence of the ulceration in the axilla. One of the pioneers in radium therapy fell victim to his work: the surgeon, Robert Abbe, died of anemia like Marie Curie after long exposure to radiations.

The French physician, Jean Bergonie, along with L. Tribondeau, gave us the Law of Radiosensitivity.

Bergonie died in 1925 from cancer caused by X rays. First his fingers, then one of his arms, had to be amputated. He finally developed pulmonary metastase, which ultimately caused his death.

To surgery and irradiation, the current mainstay in the treatment of cancer, has been added a third type of therapy, chemotherapy. Whole families of drugs have been created which are claimed to have remarkable influences on the growth of cancer cells and on the mechanisms whereby cells replicate, transmit, and translate genetic information. These new drugs not only kill the cancer cells themselves, but have many adverse effects on bodily processes in the individual harboring cancer.

We shall have to note the physician's inability, despite surgery, irradiation, or chemotherapy, to "cure" cancer. Healing can only occur endogenously through the organism's faculties when' causes are removed and the conditions for health are provided.

Every time a woman sees her gynecologist for a Pap Test; every time she reports a lump in her breast to her doctor; every time a man or woman tells his physician about a sore which refuses to heal, a persistent bleeding, a change in an ordinary mole or wart, reports constant indigestion, or a change in bowel habits, physicians employ scare tactics. They advocate caution and promote reporting any such symptoms immediately to their physician so prompt treatment may commence to ensure a "cure." The sick individual does not understand that the physician holds no "cures" and only the body has the ability to heal. Any treatment applied at this time or any time will only hinder the body's own efforts to heal.

3. What Cancer Is

Cancer is the end point (the seventh stage) of a disease process. It is a group of "diseases" found in all races and ages of man and in all animal species. It is often considered a single disease only in the sense that all cancer is characterized by unrestrained growth of unintegrated cells.

Most body structures are composed of tissues made up of many different types of cells, any of which may become cancerous if any unhealthful lifestyle is carried on. A specific type of cancer draws its name from the type of cell affected:

Cancers in connective tissue, including bones, are called sarcomas.

Cancers in cells which line the body's internal and external surfaces (lungs, breast, skin) are called carcinomas.

Cancers in cells that compose the blood-forming system are called leukemias or lymphomas.

In most cases of cancer, unrestrained cell growth leads to the buildup of tumors which compress, invade, and/or destroy normal tissues. The specific type of tumor may (but not always) indicate a probable causative agent: for example, mesothelioma, a diffuse cancer of the chest or stomach lining, is associated almost exclusively with exposure to asbestos.

Malignant tumors generally share some characteristics: higher rate of cell growth than in the normal, surrounding tissues; failure to maintain the boundaries of normal tissue and organs; a microscopic appearance which suggests immature rather than mature tissues, and a tendency to spread to parts of the body distant from the original site of the cancer. Not all these features accompany every malignant tumor, but they characterize most forms of cancer.

4. Cancer Incidence

Cancer affects people of all ages but is predominantly a disease of middle and old age as it takes time for a disease to progress to this point. Persons around age 70 account for a higher number of cases than any other age group.

Cancer is also a significant factor in the death of children. For children between the ages of 5 and 14, it ranks second only to accidents. Projections from available data show that about 7,000 new cases of cancer occur annually in children under the age of 15 years. This can be attributed to the teratogenic effect of tobacco, alcohol, caffeine, drugs, etc. Another contributing factor is the unhealthful diet of our youth including the large amounts of junk foods and meat that is consumed by them.

Recorded deaths from cancer in the United States have more than doubled since 1935. Similarly, current death rates indicate a real increase in mortality from cancer.

The most dramatic changes are the nearly twenty-fold increase in lung cancer for males, and a two-thirds increase of stomach cancer in both males and females. The increase in lung cancer for males is primarily attributed to heavier smoking, coupled with impacts from other environmental pollutants; the stomach cancer is linked to diet.

There were 358,400 cancer deaths in 1974. About one million are under treatment for the disease, and each year 900,000 new cases are diagnosed. The American Cancer Society estimates that 25% of the 213 million people now living in the United States will ultimately develop some form of cancer.

An estimated $1.8 billion per year is spent solely for hospital care of cancer patients. Additional costs, doctor bill, outpatient therapy, and other treatment-related fees, raise the direct expenditure for cancer well into the tens of billions of dollars, to these direct expenditures must be added indirect costs, such as the estimated 1.8 million work years lost in the national economy and to family income by unemployed or underemployed cancer sufferers.

Fasting and a raw food diet is an effective means to restore health; it is the only effective means. None of the cancer therapies now in use by orthodox practitioners ever result in health. Instead, they progressively destroy health.

5. Normal Cells To Cancer Cells

Cancer is a fundamental derangement of the normal mechanisms controlling the division, placement and function of cells. Whereas normal cells divide and stop dividing after a certain fixed time, cancer cells do not. They do not "know" when their division is to be stopped and they proliferate in a disorderly fashion.

As soon as cells become cancerous they are no longer controlled by body mechanisms. Cancer cells proliferate and form a mass of cells. Cancer cells have different degrees of affinity for each other, which accounts partly for their propensity to metastasize. An invasive cancer cell is a cancer cell that has a great predilection for spreading rapidly and uncontrollably.

Even though our knowledge about the division of normal cells is limited, we do know that they stop growing when they touch each other if placed on a solid surface such as that of a glass slide. This mechanism of growth control is called contact inhibition. Cancer cells, however, growing in the same

conditions, do not stop proliferating; they have lost contact inhibition. While normal cells grow on solid surfaces in single layers, cancer cells show less affinity for the solid surface and grow in irregular masses several layers deep.

Normal cells reside with one another and have a "home" of their own. A kidney cell stays in the kidney and lung cell in the lung. Cancer cells may be said to belong nowhere, to have no proper residence, no "home." We may compare the chemical composition of both normal and cancer cells, for they have the same components, although in slightly different amounts and relationships.

Cancer can be induced experimentally in animals by external agents called carcinogens. Once a cell has changed from normal to cancerous, its succeeding generations are cancerous too; this is true at the cellular level only. A cancer cell is a normal cell deranged by toxic substances and loses contact with the organism. It has been rendered "crazy" by poisoning.

6. A "Cure" For Cancer

Regarding the search for "cures" for our illnesses, Dr. Shelton says, "Removing cause is the last thing the medical mind ever thinks of. They think always of 'cures.' They search always for 'cures.' They make their money out of the 'discovery,' manufacture, distribution, sale and administration of 'cures.' One of the largest industries in the world, one that pays rich dividends to a vast worldwide army of men and women, is built around this delusion that diseases can be 'cured'."

The search for a "cure" for cancer bill be a never-ending one because there is no "cure" for our wrong-doing other than correcting our errors in living. Cancer is an end point in a pathological evolution that had its beginning long before any clinical signs of cancer manifested itself.

Dr. Shelton said, "Cancer does not attack. Cancer evolves. Cancer cells and cancer tissues are modifications of the patient's own cells and tissues. They are not foreign entities that pounce upon their unwary victims from out of the dark." So we must look to ourselves to reverse this process. When the pathological conditions which resulted in this abnormal cell growth are removed, health will begin to be restored as long as this condition has not advanced too far.

Medical pathologists recognize pre-cancer, early cancer and cancer, but they do not consider the sequences that precede pre-cancer. There are seven stages of disease which will be reviewed later. If the causes of our illness are corrected during any of the first six stages, health will be restored and cancer will never develop. Again quoting Shelton, "Searching for a cancer-causing chemical at this stage in the pathological evolution in the 'sawdust Caesar,' and ignoring all the antecedent stages of the evolution and the causes of the first and subsequent stages, is approved medical practice, but it is not at all scientific."

Destroying a growth does not remove the cause of that growth. The medical profession resorts to surgery, X rays, drugs, etc., to destroy growths but health is never restored because causes are not taken into consideration. If, for example, one lung is diagnosed as cancerous and removed, health cannot be restored if that person continues to smoke. If a woman undergoes a mastectomy for a cancerous lump and then goes home and continues to consume additive-laden junk food, her cancerous condition will continue to worsen.

Physicians do not recognize that cancer is an end point in a pathological process that has gone on for years and has had many causes. They refuse to see it as merely the last link in a chain of causes and effects that reaches Back to the very childhood of the patient. Cancer begins with the first poisons

ingested. When a child eats a hot dog with coal-tar dyes and nitrite, he is initiating the first steps toward a slow poisoning of his body which, if persisted in, may result in cancer many years down the road.

7. The Seven Stages Of Disease

The seven stages of disease were explained in detail in Lesson 2, but I will review them here as they are important in our discussion on cancer

1. ENERVATION - This is the first step in disease. Our fund of nerve energy becomes overdrawn to the point that the body is unable to eliminate the toxic by-products of metabolism. Enervation is a state in which the body is either not generating sufficient nerve energy for the tasks the body must perform, or the tasks the body must perform may be greater than the normal nerve energy supply can cope with. The body thus becomes impaired and generates less nerve energy. All the body's functions become impaired and this includes the processes of elimination of both endogenous metabolic wastes and the exogenous poisons introduced into the body (such as in our chemicalized foods). This impairment results in further diminishing the body's ability to restore depletion of nerve energy. This situation results in a condition called toxemia or toxicosis—the second stage of disease.
2. TOXICOSIS - The blood and tissues become loaded with the uneliminated toxic materials from body metabolism and/or from toxins taken in from processed foods, drinks, drugs, etc. Intoxication occurs when we overload the body with toxic materials from the outside, or we fail to observe our capacities and overwork, get insufficient sleep, or are subjected to great stress, or when any number of other factors deplete the body of nerve energy or prevent its sufficient regeneration. For instance, stresses, emotional shocks, or traumatic experiences can drain our bodies of nerve energy very quickly.
3. IRRITATION - This is the third stage of disease. The body unloads its toxicity at various points in the body. Irritation takes the form of itchiness, edginess, uncomfortable feelings, etc. Any toxic material, be it salt, caffeine, or condiments will irritate or stimulate. This is a condition wherein the body sets in force its defensive mechanisms and accelerates its internal activities. A burst of activity will result in an effort to rid the body of these unwanted irritants
   If the causes of enervation/intoxication/irritation remain, inflammation results.
4. INFLAMMATION - This is the stage of disease that is usually first noticed and is recognized by physicians as pathology, for it involves pain. Energy that would normally be available for activity there is pre-empted and redirected to the massive effort to cope with a severe condition of intoxication
   In inflammation, the toxicants have usually been concentrated in an organ or area for a massive expulsive effort. It is an evidence or symptom of increased and intense body activity directed at cleansing and repair. It is a healing activity. If this eliminative effort is suppressed by drugs, the toxicity increases until other organs become saturated—not only with this toxicity but with the drugs administered as well. This fourth stage of disease is the body's most intense effort to cleanse and restore itself. The following degenerative stages of disease will result if the causes of general body intoxication are continued.
5. ULCERATION - During this stage, poisonous matters have begun destroying cells and cellular organizations (tissues). This condition is often very painful as there are exposed nerves. The body may use an ulcer as an outlet for extraordinary toxic buildup thereby relieving itself. It will heal the ulcer if causes are discontinued, or if the toxicity level is lowered significantly.

6. INDURATION - This is a hardening where the body creates tumorous tissue (a kind of scar tissue) to bridge the lost tissue and to encapsulate the poisonous materials that are destroying it. The ulcer and the toxic materials are scaled off by the hardening of the tissue around them. This is the way of quarantining the toxic materials, often called tumor formation. It is this condition that is often falsely diagnosed as cancer. If the Life Science health regimen is followed at this point, the condition can largely be repaired or reversed. Should the pathogenic practices, which brought matters to this stage be continued, cells and tissues go wild and live in a parasitic manner. This condition is called cancer.
7. CANCER - This is the seventh and final stage of disease. Body vitality is at a very low ebb; cells are no longer under the control of the body's master control system, the brain. They multiply wildly in an unorganized manner without purpose. They may be giants or dwarfs and they draw their needs from the bloodstream without contributing to body functions. Cancer cells are parasitic cells. Once this condition is reached, there is little hope except to arrest and control the process. Only the healthiest of regimens can do this.

8. Can Cancer Be Prevented?

You must keep in mind that health is natural and illness is not. Your body always strives to maintain homeostasis and a healthy state. If illness manifests itself, it means that the body has not been provided the best circumstances for maintaining this balance and has been overwhelmed with toxins. It therefore initiates a healing crisis in order to rid itself of its toxic burden in order to preserve a state of health that it is always striving for. This "healing crisis" may be in the form of a cold, flu, eczema, fever, tonsilitis, etc. At this point, if the causes of ill health are corrected and all the requirements for health are provided, illness will progress no further and health will again be reinstated. On the other hand, if these symptoms are suppressed, the toxic overload will not be discharged. More serious illnesses will ensue with the final end point being cancer.

It soon becomes clear that cancer cannot be prevented, neither is it an inevitable fate.

9. How Not To Develop Cancer

In spite of our polluted environment, the wide use of poisonous sprays on the crops (chemical farming), use of poisonous additives to our foods, and other environmental carcinogens, we do not have to develop cancer if we know how to live. What must we do to ensure ourselves of this health? Simply obey the "Laws of Life." If you provide the conditions for health, cancer cannot develop. Eat only those foods that we are biologically adapted to eat in their raw state. Exercise daily in the fresh air and sunshine. Drink only pure water when thirst demands it.

It is during the first stage of disease (enervation) where cancer begins and it is at this stage where it is most easily corrected. Simply fast for a day or two and look at your practices to determine what you are doing wrong. You may have to get more sleep or eat more healthfully. If you take these simple steps, you can rest assured that you will not develop, cancer or any other degenerative disease.

10. The Requirements For Health Will Fullfill The Needs Of The Sick

Even if your illness has progressed as far as the sixth stage of disease, health may still be restored. Keep in mind that the needs of the sick individual are the same as for those in health. You cannot treat the sick individual with poisonous drugs or other enervating treatments and expect him to regain health any more than you could expect to administer these drugs to a healthy person and expect him to remain healthy.

The sick individual differs in that he needs more rest. His body is in a state of extreme enervation and in order to heal, all bodily energies must be directed solely to this task. Therefore, fasting is the most effective means for providing this requirement. During the fast, energy is conserved for this task and healing will immediately commence. Cysts and tumors will be autolyzed and general bodily cleansing and detoxification will take place. This must be followed by a correct dietary regime along with proper rest with the introduction of a moderate exercise program when strength returns.

If the cancerous condition has advanced well into the seventh stage of disease, it may not be possible to reverse this process through fasting. However, fasting at this time will result in a slowing down or halting of the advance of cancer and the individual will feel more comfortable with little or no pain. It is far better than the suffering experienced by those cancer patients who are treated with chemotherapy or any of the other orthodox cancer treatments.

11. Habits

When it comes down to the bottom line, probably the greatest cancer-causing agent in our environment is we, ourselves. How we live and what we do affect, to a large extent, whether or not we will get cancer. Lung cancer is—80% of the time—the direct result of smoking. Cancer of the esophagus, throat and bladder has been linked to drinking alcohol and hot drinks such as coffee and teas. Early sex has been correlated with cancer of the cervix. Habits are hard to break. The first reports linking tobacco to cancer date back to the 1700s. Yet, even today, despite overwhelming evidence, people still smoke and rationalize about its dangers.

Diet has also been linked to cancer. But would Mexicans give up highly-spiced food or Japanese forgo talc-treated rice in an effort to avoid stomach cancer so prevalent among them? Would Americans forgo high-fat diets and highly-processed food to reduce chances of breast cancer and cancer of the colon? Would young girls and middle-aged women stop basking in the midday sun for hours at a time? No, because they equate a suntan with beauty. They choose to ignore the definite risk link between skin cancer and overexposure to ultraviolet rays.

However, if the truth were presented to these people in a rational manner, I am sure that they would see that it is much easier to give up their small habits than to suffer the immense discomfort and pain of cancer.

12. Cancer Treatment

It is a well-known paradox that many of the chemical agents currently used in the treatment of cancer are themselves carcinogenic. Virtually all the commonly-used alkylating agents, including the nitrogen mustards, HN2 and HN3, treatamine (TFM), chlorambucil, sacrolysin and melphalan, and busulphan (byleran) can induce cancer fairly readily in experimental animals.

Studies have proven conclusively that untreated cancer sufferers actually live up to four times longer than treated individuals.

For a type of cancer, people who refuse treatment lived for an average of 12 1/2 years. Those who accepted surgery and other kinds of treatment lived an average of only three years! Beyond a shadow of doubt, radical surgery on cancer patients does more harm than good.

According to Ivan Illich (*Medical Nemesis*), "There is little evidence of effective treatment of most cancers. The five-year survival rate in breast-cancer cases is 50 percent, regardless of the frequency of medical check-ups and regardless of the treatment used. Nor is there evidence that the rate differs from that among untreated women. Although practicing doctors and the publicists of the medical establishment stress the importance of early detection and treatment of this and several other types of cancer, epidemiologists have begun to doubt that early intervention can alter the rate of survival."

13. Chemical Contaminants

In the past 10 years, the production of synthetic organic chemicals has expanded by 255 percent; relatively few of the new compounds have been studied for their cancer-causing potential. Because of the typical development period of 15 to 40 years for cancer, we must assume that much of the cancer from recent industrial development is not yet observable.

The majority of known environmental carcinogens are encountered at the workplace. In fact, the link between cancer and chemicals was first detected among workers; in 1775, soot was singled out as a causative agent in chimney sweeps cancer, cancer of the scrotum. Above-normal incidences of cancer are found in workers having contact with known or suspected carcinogenic substances such as asbestos, arsenic, benzopyrene, benzidine, bis-chloromethyl-ether, coal tar, carbon black, and vinyl chloride.

One such agent is benzidine, of which many million pounds are produced annually in the United States for use in making dyes. An excess of bladder tumors among workers in the industry was first reported in the early 1930s. But because benzidine was just one of a number of compounds to which these workers were exposed, a specific causative agent could not be identified at that time.

Later studies of populations of workers exposed only to benzidine firmly established a cause-and-effect relationship. One retrospective study of a coal-tar dye plant conducted in 1965 showed that 17 of 76 (21%) of workmen, exposed only to benzidine developed bladder tumors. This incidence rate greatly exceeds that of bladder cancer in general U.S. population—13.2 cases per 100,000 population.

Association of occupational exposure to asbestos with increased lung cancer was first reported in the 1950s. The, diagnosis of mesothelioma, an otherwise rare type of cancer, in some asbestos workers provided conclusive evidence that asbestos is a cancer hazard. In the past decade, mesothelioma has suddenly become more common: where environmental data exist, most cancer sufferers may be traced to

potential or actual asbestos exposure. This exposure often occurred in the workplace, but not infrequently it was associated only with residence in the vicinity of an asbestos processor or in the household of an asbestos worker. Asbestos products—fabrics, housing insulation, ceiling tile, brake lining—are an additional source of exposure.

Until recently, vinyl chloride, a gas used primarily in the manufacture of polyvinyl chloride plastic, was also used as a propellant for aerosol sprays. In 1974, the discovery of four cases of angiosarcoma of the liver among vinyl chloride workers in a plant in Louisville suggested that vinyl chloride is a carcinogen. Workers exposed to vinyl chloride were later discovered to have a significant excess not only of angiosarcoma but also of more common cancers of the respiratory system, brain and the lymphatic system.

Chlorinated hydrocarbons and arsenical pesticides that have been used in homes and gardens are known carcinogens. Commercially-processed foods have also been found to contain residues of pesticides known to be carcinogenic and other chemicals suspected of being so. Foods may also contain naturally-occurring carcinogens such as aflatoxins produced by particular mold contaminants. Drugs and cosmetics have been reported as carcinogenic. Estrogen as well as synthetic drugs developed for treating chronic conditions such as diabetes, arthritis and anemia have been implicated in helping to produce a variety of malignant tumors.

Combustion products released from industrial smokestacks as well as from chimneys of office buildings, apartment buildings, hospitals, and government and municipal buildings may contain a variety of carcinogenic materials. In 1975, the Environmental Protection Agency found cancer-producing agents in low concentrations in the drinking water of all 80 cities whose water supplies it investigated.

14. Geographical Factors

Cancer rates vary significantly throughout the United States. In general, states with high rates are the industrial states. Analysis county by county reveals that a majority of the areas of high mortality from cancer are located in large cities. For example, the high mortality in Illinois reflects rates in the Chicago area.

It has long been known that densely-populated and industrialized areas have higher death rates from many causes than nearby rural areas. Urbanization and mortality have been associated for heart disease, cancer of the respiratory and digestive systems, and many other diseases. This excess health risk is related to lifestyle (urban dwellers use more tobacco), to occupation (working with industrial pollutants), to the environment of cities (air and water pollution), and to other factors.

15. Cocarcinogens

Whether found in polluted urban air, in cigarette smoke, or in some products derived from coal tar and petroleum, environmental carcinogens usually occur in a complex mixture. The mixture of chemicals can multiply the risk of cancer that would be encountered with one carcinogen alone. For example,

although 75 to 85 percent of lung cancers are related to smoking, particularly cigarettes, atmospheric pollution and some occupational exposures appear to exacerbate the risk. According to one calculation, asbestos workers who are nonsmokers contract lung cancer at normal rates, but a cigarette smoker who works with asbestos has eight times the risk of dying of lung cancer as similar smokers of the same age who do not work with asbestos and 92 times the risk of laborers who neither work with asbestos nor smoke.

1. Carcinogens In Food

There are many carcinogens in food that is consumed by most Americans today. It is important that the general public be aware of these poisons so that they can make rational decisions when choosing food.

1.1 Fish

Fish are extremely sensitive to pesticides. They sicken or die at very low concentrations, much lower than for most living organisms. Concentrations as low as two parts per trillion of DDT were found to cause problems in the Great Lakes. The consumer can be harmed by eating fish that has been poisoned but not killed outright. Fish have been known to concentrate these poisons 2,000-fold over the amounts in the water where they were found.

1.1.1 Shellfish

In recent years, state and federal agencies that control oyster beds and their care have been pouring materials into the sandbanks to protect oysters from their enemies, such as starfish and other sea creatures. These materials are made of insecticide, and a chemical (orthodichlorobenzene) combined with sand. Sea animals, venturing into the treated sandbank, perish from the poisons in different ways.

A starfish, for example, goes into a spasm and disintegrates. An oyster drill, a member of the snail family, swells up to such an extent that it is forced out of its shell and either dies or is devoured by fish. A crab loses its sense of balance and goes into convulsions. You may well wonder whether the chemicals ultimately make the oyster poisonous to eat. Oysters are far away from our natural food and these chemical toxins give us double reason to eschew them.

1.1.2 Hatchery-Raised Trout

The feeds developed for trout were similar to those previously used for poultry. When the pellets were fed to baby chicks, the birds developed cancer. Later rainbow trout, raised in hatcheries, were given this feed in hopes of achieving maximum weight gains in the shortest period of time before being released into streams.

In the early 1960s, hatchery-raised rainbow trout that were fed this pelleted feed developed liver cancer in what leading cancer specialists considered epidemic proportions. In some hatcheries, 100% of the trout were affected. The outbreak seemed related to a cancer-inducing ingredient, still not completely identified, but present in the fat fraction of the feed. Upon investigation, moldy cottonseed meal in the dry feed was suspected as the most likely cause of the cancer. Dr. Hueper, one of the investigators, says, "The fact that at times carcinomatous involvement affects not only the liver and other internal organs not ordinarily used for human foods, but at times also the muscle tissue, provides an additional reason for caution against any laxity in the application and enforcement of existing laws." The likelihood of strict

reinforcement of these laws is very low. The best advice is to not eat any fish.

1.1.3 Fresh Fish

Fresh fish may be refrigerated in crushed ice containing preservatives such as sodium benzoate, sodium nitrite, hydrogen peroxide, ozone, or chlorine to inhibit spoilage. In recent years, cases of illness and deaths were traced to excessive amounts of sodium nitrite added to fish by sellers' who hoped to prolong even further the shelf life of their products.

1.2 Eggs

Eggs are vehicles for residues of a wide range of chemicals present in the diet and environment of laying hens. Antibiotics in feed may more than double the egg laying in low-producing hens. There is also pressure to include antibiotics in the drinking water of layers as well. Feed medicated with antibiotics must be withheld from birds when they are laying. But even when this recommendation has been followed, antibiotics have been detected.

Although the FDA has set "zero" or "negligible residue" tolerance levels for pesticides in eggs, there is no assurance that this food is uncontaminated. Poultry management and poultry feed may both contribute to pesticide residues in eggs.

1.2.1 Drugs

Drugs may be used with laying hens. A tranquilizer, used in conjunction with antibiotics in layer feed, was advertised as boosting egg production since it "calms birds, reduces blood pressure and heart rate, increases respiratory rate." Experimentally, hens fed aspirin laid more eggs. Another drug has been found to be effective in reducing "laying slump"; at the same time it cuts feeding costs.

1.3 Poultry

1.3.1 Arsenic

Since 1950, small amounts of arsenic as arsanilic acid have been incorporated into poultry feed to stimulate early maturation, increase efficiency of feed utilization, produce more eggs, "improve" skin coloring and feathering, and yield more profits.

Currently 90% of all commercial chickens are raised with arsenic in their feed. The arsenic-containing feed must be discontinued long enough before slaughter for the birds to eliminate most—but not all—of it from their meat. Even though arsenic is listed as a carcinogen for man, the FDA allows tolerance residues of 0.5 ppm for it in chicken and turkey tissues, and twice that amount in the byproducts of these birds.

The liver is the detoxifying organ of animal and man. Dr. Manuel Schreiber, FDA toxicologist, stated that dangerous accumulations of arsenic have been found in chicken livers.

1.3.2 Drugs

Another group of "anti-infective" agents, the bacteriostats, are incorporated routinely in poultry feed to control the growth of "undesirable" bacteria. These include drugs which can result in dermatitis in man when applied to the skin, and others which are toxic. Little is known about the general effects of these materials, when eaten frequently in small amounts.

1.3.3 Caponettes

Hormones in poultry production have been used even longer than with livestock. The estrogenic female sex hormones, especially stilbestrol, were first used to caponize birds chemically. The use of stilbestrol was extended to include the treatment of all types of table poultry of both sexes, being highly profitable to the poultrymen. It put weight on birds quickly, and could even give old birds the appearance of youth, with plumper, more attractive flesh.

Since the cancer-inciting nature of stilbestrol was established, the FDA was forced to take action. The agency chose a course least upsetting to the economics of poultrymen, by persuading the industry to "voluntarily" discontinue the use of stilbestrol implants.

Despite this agreement, hormonized birds continued to be shipped by individual poultrymen. In New York City. 25,000 pounds were seized by the Department of Markets. The shippers complained that New York City is "the only city in the country where the FDA ban is being rigidly enforced."

Although the stilbestrol pellet implants were banned, the use of stilbestrol was, and still is permitted in poultry and livestock feed. In addition, a U.S. patent was granted to allow stilbestrol as an additive to the drinking water of poultry, to increase "meat-producing efficiency."

1.3.4 Pesticides

In 1965, the USDA tested 2,600 poultry samples in every federally-inspected plant throughout the nation, and found all birds contaminated with pesticide residues. No one section of the country was better than another. Primary sources of infection were traced to sprayed grain and animal tallows in the feed and to poor husbandry practices. No seizures were made, nor did the USDA divulge specific results, such as the most common contaminant or levels of pesticides found.

1.3.5 Cancerous Chickens

Until 1970, the USDA's policy had been to condemn the entire carcass of the chicken if any organs or sections of the bird showed signs of leukosis. The poultry industry considered this to be an economic hardship and it pressured for lowering the standards for condemning birds. The USDA appointed a panel of veterinarians and animal-disease specialists to review the problem. Although the panel recommended continuing the policy, of condemning birds whose internal organs show active signs of leukosis, it suggested that chickens bearing cancer be allowed on the market if they "do not look too repugnant." The USDA endorsed the proposals. Officials from the agency said that if tumors were detected on the wing of a bird, the wing could be cut off and used in products such as hot dogs, while the rest of the bird could be cut up as chicken—all without posing a threat to human health.

If one portion of the animal shows signs of disease, the entire bird is in a diseased condition. Hiding the worst sections in such products as hot dogs does not make the meat acceptable for consumption. Just because people do not die immediately from ingesting these products does not mean that they are not being harmed by them.

1.4 Hamburger

Toxins are prevalent in ground beef. This popular food item offers many opportunities for economic frauds, such as additives and illegal extenders. It may be adulterated with coal-tar colors, cochineal, and sodium nitrite or benzoate of soda. Dr. Freese at the National Institute of Health has strongly recommended that sodium nitrite be banned from use in foods. In the human stomach, sodium nitrite is converted to nitrous acid, which is mutagenic in a variety of lower organisms. Sodium sulfur is another additive, can mask the smell of deteriorating meat, and give it a fresh-meat redness. Such meat is injurious, especially if eaten rare. Sodium sulfite is a poison that destroys vitamin B, and is capable of causing considerable damage to the digestive system and other organs. Yet tested samples of ground beef

purchased as ready-chopped hamburger, or sold at hot dog stands, cafeterias, and restaurants, frequently shows adulteration with this chemical. Hamburger meat served in restaurants often contains sodium nicotinate to preserve its bright red color. Although this chemical is illegal in some municipalities, 37 states permit its use. Several outbreaks of poisoning have been traced to this additive.

Eating grilled or pan-fried hamburgers may result in cancer. Chopped meat cooked on a metal surface at temperatures higher than 300 degrees Fahrenheit produces mutagens (substances that cause genetic change). The particular mutagens in fried hamburgers have not yet been identified, but 90% of all mutagens ever tested cause cancer in laboratory animals. These hamburger mutagens represent a risk of cancer in people. The longer the cooking, the more mutagenic the hamburger. Further analysis revealed the new mutagen is distinct from two other carcinogens previously identified in cooked meat—benzopyrene, similarly mutagenic and produced by cooking meat over a high heat, and pyrolyzed amino acids from the charred surface of meat cooked directly over a flame.

So besides the toxins already present in meat, plus those added to the hamburger, there are additional risks when the meat is fried or charcoal broiled, which is the usual method of preparation. The traditional summer picnic including charcoal broiled hamburger is best left in the past. Substitute fruit picnics and your health will improve rather than decline.

1.5 Hot Dogs

Preservatives similar to those in ground beef may also be used in frankfurters. Other, additives may also be present, such as antioxidants to retard rancidity, or tenderizers. A coal-tar color (Red No. 1) was commonly used in the casings of frankfurters until banned by the FDA after this material produced liver damage in experimental animals. Casings are still dyed with artificial colors, and proof of their safety is not conclusive. Although regulations prohibit the use of coloring if it penetrates the produce, on occasion dyes on frankfurters have been found to penetrate as much as one fourth of an inch into the meat.

1.6 Pork

Results of a nationwide survey revealed that "whether the sausage came from a federally-inspected packing plant or from the meat grinder of a local butcher, it was often sour or rancid and frequently contaminated with an overabundance of bacteria. Some of it was contaminated with filth. Not one sample, out of the packages tested for quality and flavor, could be judged really outstanding."

Pigs raised commercially are diseased. Many die before the farmer gets a chance to market them. Those that do survive are sick and toxic. These toxins are transferred to the people who eat the pork.

1.7 Other Toxins in Meat

1.7.1 Federal Label

Labels for federally-inspected, canned, packaged, or frozen meat must list all the ingredients, common name of the produce, name and address of the processor or distributor, mark of approval and accurate weight. However, meat can be processed legally with sodium nitrate, sodium nitrite, sodium ascorbate, and many other chemicals sanctioned by the FDA.

Presently in the United States, up to 500 ppm of sodium nitrate, and up to 200 ppm of sodium nitrite are permitted in certain meats and meat products (and in certain fish and fish products, poultry, and wild game). Far lower limits are set in Europe.

"Nitrites should be immediately reduced or eliminated as food preservatives, especially on meat and fish." This recommendation was made jointly in February of 1970, by Dr. Samuel S. Epstein of the

Children's Cancer Research Foundation of Boston and Dr. William Lijinsky of the college of medicine at the University of Nebraska. Noting that nitrosamines—which include nitrites—can produce mutagenic changes, the researchers suspect that by similar pathogenic processes, these agents are carcinogenic and teratogenic as well.

1.7.2 Stilbestrol

Medications in feed are used to increase weight rapidly. The most sensational gains are achieved by adding hormones and hormone-like substances to the feed. Stilbestrol is used extensively. Currently, it is estimated that 80 to 85% of all beef cattle are being fed on feed containing stilbestrol. It is also used in the feed for sheep and lambs.

Stilbestrol has been acknowledged by scientists as a potent carcinogen, and has been labeled "biological dynamite." Quantities of stilbestrol as small as 2 ppb are toxic in diets of experimental mice. Cancers in these test animals have been induced by daily doses as low as 7/100,000,000 of a gram (one fourth of a hundred-millionth of an ounce). It can also cause leukemia and cysts in animal organs. In human beings, it has resulted in breast cancer, fibroid tumors, and excessive menstrual bleeding in women, sterility and impotence in men, and arrested growth in children. *The Medical Officer*, an English journal for government health officers, reported that hormone traces in the meat of chemically-fattened livestock are causing British school girls to mature at least three years earlier than in the past.

More important than an occasional large dose of stilbestrol is the danger of repeated small amounts. Since consumers may be ingesting small amounts repeatedly in food consumed over a period of years, this is a factor of prime importance.

The use of stilbestrol for livestock is permitted by the FDA as long as no "detectable" residue of it is found in the edible portions. Stilbestrol fed to experimental rats broke down into four or five products, and they were found in areas of the animals' bodies not previously known to contain such residues. Using a radioactive tracing technique, the breakdown products were found in the muscles, livers, kidneys, lungs, and skeletons. Such materials also may be present in treated livestock.

Despite the hazards of this hormone, the FDA doubled the amount of stilbestrol permitted in the feed of beef cattle in late 1970.

Besides hormones, antibiotics, tranquilizers and pesticides are fed to meat animals. Injections are also given to animals on the hoof before they are slaughtered to tenderize the meat.

1.7.3 Unhealthy Animals

An average of 10 to 30% of beef livers at slaughterhouses are condemned because of abscesses. USDA records showed that during a one-year period, Americans ate millions of pounds of beef from cattle that had "cancer eye" or similar tumorous disorders. The diseased parts were merely cut out and the remainder of the carcass was permitted to be marketed. Agriculture officials claim that such localized tumors pose no threat to human beings eating meat from other portions of such animals. A government report showed that more than 10% of the 30.1 million cattle carcasses approved by federal inspection underwent some post-mortem cutting for removal of diseased parts.

Another report showed that 2,400,000 cattle whose cancerous or tubercular livers were discarded had the rest of their carcasses sent on to be processed for food.

You can see now, why cancer is so prevalent among meat eaters.

1.8 Sugar

The refined-carbohydrate diet is blamed by Dr. Denis F. Burkitt as the single most important cause of large-bowel cancers, occurring on a worldwide scale when people forsake their traditional dietary habits

and consume large amounts of refined carbohydrates.

Avoid sugar, advises a famous English nutritionist, and you are less likely to become fat, run into nutritional deficiencies, have a heart attack, develop diabetes or dental decay or a duodenal, ulcer, and possibly reduce your chances of getting gout, dermatitis, some forms of cancer, and in general increase your life span. It is important to realize that by the mere omission of a single common food, and beverage ingredient such as sugar, so many benefits may result, and that its excessive use can contribute, at least in part, to so many desperate conditions and diseases.

1.8.1 Brown Sugar

The commercial brown sugar color isn't from molasses residue. Virgin sugar is rinsed to remove molasses residue, then put into a centrifuge where it is separated from the crystals. This is melted, filtered and boiled repeatedly with animal-bone charcoal to concentrate and form crystals. Molasses is added back to sugar to achieve its brown color.

Dr. W. C. Heuper, M.D. in an experimental study for Cancer Research warns that sugar manufactured with this animal-bone charcoal process may be carcinogenic (cancerous).

1.9 Fats and Oils

1.9.1 Hydrogenation

How is the liquid oil or soft fat hardened? It is exposed o a high temperature and placed under pressure. Hydrogen is then bubbled through the oil in the presence of nickel, platinum, or some other catalyst.

The hydrogen atoms combine with the carbon atoms, and the produce becomes saturated or hardened.

There is no assurance that nickel, if used as the catalyst, leaves no residue in the product. This element, even in minute quantities in the diet, is suspected of being a carcinogen.

As evidence has mounted revealing the menace of hydrogenation, some shortening processors have attempted to change their methods to avoid economic losses. They proclaim their products "high in unsaturates" but adding that they "stay freshly sweet at room temperature." These products may contain antioxidants, in addition to emulsifiers, defoamers, and artificial colors and flavors. Artificial antioxidants in fats are considered possible carcinogens.

1.9.2 Heated Oils

Prolonged heating and reheating at high temperatures produce harmful substances suspected as cancer-inciting or oils. Deep-fat frying is favored in many short-order diners and also in "good" restaurants for economy, speed, and convenience. It is a method also used extensively in processed foods like potato chips, doughnuts, baked goods, serve-and-heat dishes, as well as in many homes. Consumers Research recommends that deep-fat frying should be avoided. Also be shunned are all burned fatty foods and charcoal-broiled meats. All charred, blackened, or burned portions of meats or other fatty foods are carcinogenic.

1.10 Caffeine

Caffeine has been shown to result in genetic and chromosomal changes in animals, bacteria, and higher plants. A retrospective study showed that men who drank cola beverages containing caffeine have a significant increase in bladder cancer compared to noncola drinkers. Other studies' which implicate coffee and caffeine as mutagenic include discussion of genetic effects and effects on chromosomes of human lymphocytes.

1.11 Alcoholic Beverages

Consumption of alcoholic beverages entails an increased risk of developing cancer of the mouth, larynx, pharynx, and esophagus according to the International Agency for Research on Cancer of the World Health Organization. The evidence is that the increase in cancer of the esophagus is proportional to the amount of ethanol consumed. In all four cancer sites, the role of tobacco is also important, and the ill effects of these two factors—drinking alcoholic beverages and smoking tobacco—tend to multiply when they act together. Ethanol may act as a cocarcinogen by enhancing the role of other cancer-causing agents. Ethanol is an excellent solvent for chemicals that are themselves cancer-causing agents, such as polycyclic hydrocarbons and nitrosamines. The presence of these chemicals has been detected in some commonly-consumed alcoholic beverages drunk in areas where esophageal cancer is common.

2. Some Specific Carcinogens In Food

2.1 Coal-Tar Dyes

Coal, when heated in the absence of air, is converted to coke (impure carbon), coal gas, and coal tar. The coal tar, a viscous black liquid, is a mixture of many organic compounds. In the 1800s, English arid German chemists learned that they could produce intensely-colored substances when they purified some of these compounds and reacted them with other chemicals. These synthetic substances are known as coal-tar dyes and are used in great quantity by the food, fabric and cosmetic industries.

Americans are consuming coal-tar dyes in their food at an increasingly rapid rate. In 1970, slightly over 3,735,000 pounds were certified by government inspectors. These dyes are used in beverages, candy, ice cream, dessert powder, baked goods and sausages. Levels used ranged from approximately ten parts to five hundred parts per million, the lower levels being used in liquid foods (beverages, gelatin desserts) and the higher levels in solid foods (pet food, breakfast cereal, etc.).

People have been concerned about the possible toxicity of coal-tar dyes ever since they were introduced in the second half of the nineteenth century.

In view of the repeated dangers associated with coal-tar dyes, one might assume that the dyes now in use have been thoroughly tested. That is not the case. Adequate lifetime feeding studies (two rodent species, forty or more animals per dosage level), which must be done to reveal carcinogenic and cumulative effects, have been conducted for only five dyes (Yellow 6, Red 4, Green 3, Orange B, and Citrus Red 2). Lifetime studies on dogs have been performed only with Orange B, Red 2, Red 4, and Yellow 6. Not one of the coal-tar dyes used in food has been adequately studied for causation of mutations.

If these tests were to be correctly conducted, there is no doubt that they would find that all coal-tar dyes are indeed carcinogenic. They are all extremely poisonous substances and everyone should exclude these products from their diet if they wish to maintain health.

The safety of Violet 1 was a question mark for many years. The dye was used to stamp the Department of Agriculture's inspection symbol on meat and also to color candy, beverages and pet food. The FDA certified almost 67,000 pounds of this dye in 1972. Consumers may ingest a small amount of the dye when they eat a steak or roast. Workers in packinghouses may be exposed to much greater amounts. The men who imprint USDA's mark on carcasses frequently get the dye on their hands; occasionally large amounts drip down their hands and arms. One Department of Agriculture meat inspector in North Carolina observed that "the dye is pretty hard to get off. Once you get it on your skin, you almost have

to wear it off."

A study published in 1962 by Dr. W. A. Mannell and his colleagues at Canada's Department of National Health and Welfare, involved rats. This study indicated that the dye (Violet 1) caused cancer. Of thirty rats fed 3 percent dye in their food for seventy-five weeks, five developed malignant tumors. Three of the tumors were skin tumors. Four of the five tumors occurred in females. Only one out of thirty untreated rats developed a tumor.

In early 1971, nine years after Violet 1 was first suspected of being carcinogenic, the FDA asked the National Academy of Sciences to convene a group of nongovernment scientists to evaluate all available studies. The committee met in Washington on September 1, 1971, and filed its final report in November. The committee's conclusion and recommendations were finally made public in March 1972, more than a year after the committee was first announced.

The NAS committee dismissed out of hand the Canadian study that indicated that Violet 1 caused cancer. The committee declared the dye safe, but did recommend that a lifetime feeding study be conducted on dogs. The net effect of their report will be to postpone the permanent acceptance or banning of this coloring for at least eight years or more.

Citrus Red 2 is another coal-tar dye under investigation. Florida orange growers use the dye, mainly from October through December, to cover up the mottled green color on oranges, tangelos, and temple oranges.

Four lines of evidence suggest that the dye might be a carcinogen:

1. When the dye was mixed with cholesterol and implanted in the urinary Bladders of mice, 14.5% of the animals developed tumors; cholesterol without dye caused tumors in 4.5% of the mice.
2. When the dye was injected under the skin of mice, malignant tumors developed in the lungs.
3. The liver converts the dye to less noxious substances, which then pass into the urine; one of the intermediates in the conversion process is 1-amino-2-naphthol; there is evidence that this chemical causes cancer.
4. The walls of the urinary bladders were markedly thickened in animals whose diet contained the dye.

On the basis of this array of evidence the FAO/WHO Committee issued the following warning at its annual meeting:

Citrus Red 2 has been shown to have carcinogenic activity and the toxicological data available were inadequate to allow the determination of a safe limit. The Committee therefore recommends that it should not be used as a food color.

American consumers are endangered if they eat or suck the peel of treated oranges or use the peel in marmalade. Unfortunately, oranges are no longer individually stamped "color added" so it is difficult to identify treated oranges. When oranges are not stamped, supermarkets are supposed to post signs saying "artificially-colored oranges." FDA administrators in Washington admit that grocers from one end of the country to the other are ignoring FDA's regulations, but plead that they have too little manpower to stop this "minor" infraction. Workers who produce Citrus Red 2 and who dye the oranges may ingest or inhale relatively large amounts of the chemical. They would be exposed to a proportionately-greater hazard than the average consumer.

The identification of coal-tar dyes on food labels is as inadequate as the testing the chemicals have undergone. The presence of coloring in butter, cheese, and ice cream need not be specified at all. In other foods, colorings are never identified specifically as Violet 1, Green 2, etc., but only say "artificial coloring."

Name of Dye	Effects on Test Animals	Permitted In
Amaranth (U.S. Red Dye No. 2)	Tumor production	jams and jellies, fruit drinks, bread, ice cream, flavored milk, pickles, ketchup
Brilliant Blue	FCF Tumor production	as above
Citrus Red, No. 2	Tumor production	orange skins
Carbon Black	Tumor production	jams and jellies, fruit drinks, dried eggs

2.2 Tannins and Tannic Acid

Tannic acid occurs in the bark and fruit of many plants notably in the bark of the oak species, in sumac, cherry wild bark, and in coffee and tea. It is used to clarify beer and wine and as a refining agent for rendering fats. Tannins are used as a flavoring in butter, caramel, fruit brandy, maple and nut flavorings for beverages, ice creams, ices, candy, baked goods and liquors. They art used medically as a mild astringent. When applied, they may turn the skin brown. Tannic acid has a low toxicity when taken orally, but large doses may result in gastric distress. During World War II, liver damage was observed in humans treated with tannic acids for burns. Subsequently, experiments with rats showed repeated subcutaneous injections of a water solution of tannin led to liver toxicity, cirrhosis and tumors.

2.3 Nitrate

Potassium nitrate, also known as saltpeter and nitre, is used in gunpowder and fireworks and as a color fixative in cured meats. Sodium nitrate, also called Chile saltpeter, is used as a color fixative in cured meats. Both nitrates are used in matches and improve the burning properties of tobacco. They combine with natural stomach saliva and food substances (secondary amines) to create nitrosamines, powerful cancer-causing agents. Nitrosamines have also been found in fish treated with nitrates. Nitrates have caused deaths from methemoglobinemia (it cuts off oxygen from the brain). Because nitrates are difficult to control in processing, they are being used less often. However, they are still employed in long-curing processes, such as country hams, as well as dried, cured, and fermented sausages.

2.4 Nitrite

Potassium nitrite is used as a color fixative in the $125 billion a year cured meats business. It is used as a color fixative in cured meats, bacon, bologna, frankfurters, deviled ham, meat spread, potted meats, spiced ham, Vienna sausages, smoked-cured tuna fish products, and in smoked-cured shad and salmon. Nitrite combines with natural stomach and food chemicals (secondary amines) to create nitrosamines, a powerful cancer-causing agent!

2.5 Fish Tumors

Populations of catfish, croakers, calamanders, and other marine animals found in polluted areas often have tumors, while the same species living in a clean environment do not. Scientists have already proven that pollution may be passed along the food chain to people when aquatic organisms accumulate cancer-causing chemicals. Mollusks living in areas polluted with domestic sewage can be reservoirs for disease,

and eating mollusks from such areas may result in thyroid disorders and hepatitis.

Pollution certainly seems to play a part in fish tumors. Fish caught in the Fox River on the outskirts of Chicago have almost 16 times as much cancer as do fish caught in Lake of the Woods, Ontario, Canada.

2.6 Ethyl Alcohol

Ethyl alcohol contains ethanol, grain alcohol, and neutral spirits. It is used as a solvent in beverages, ices, ice cream, candy, baked goods, liquors, and gelatin desserts. It was approved in 1976 for use in pizza crusts to extend handling and storage life. It causes cancer when inserted in the rectum of mice in doses of 548 milligrams per kilogram of body weight, and it causes tumors when given orally to mice in 2,770 milligram doses per kilogram of body weight.

2.7 Aflatoxins

Aflatoxins are the best-studied members of a class of compounds called "mycotoxins" (toxins formed by molds). An outbreak in 1960 in England of "Turkey X disease," an acute liver condition, was traced to peanut meal contaminated with the mold, which occurred after improper harvesting and storage.

A single dose of 5 milligrams per kilogram of body weight has induced tumors in rats. The marked differences in, geographical distribution of liver cancer in humans has long suggested the presence of some common factor. In areas of Africa where there is a high incidence of liver cancer, aflatoxin contamination is common. Aflatoxin B1 is one of the most potent cancer-causing agents known in animal testing. Levels as low as one part per billion 1 produced1 liver cancer in rats. Previous experiments showed a 100% incidence in rats on a lifetime diet containing 15 times that amount of aflatoxin B1.

In addition to liver cancer, aflatoxins have been implicated in the formation of tumors of the stomach, kidney, and some other tissues.

Make sure that the nuts you eat are fresh. Dr. William Wardell, director of the Center for the Study of Drug Development, University of Rochester School of Medicine, speaking at a symposium on Public Issues and Private Medicine, December 6, 1978, in Philadelphia, pointed out that "when a batch of peanuts is imported containing aflatoxin levels that are too high for us to eat, the current method of control is to dilute the contaminated batch with a clean batch to bring the level down to acceptable proportions."

2.8 Charcoal Broiling

Cancer-causing agents can be formed in charcoal-broiled food according to the NCI. It is safer to boil or poach food than to charcoal broil it. It is believed that at least two kinds of substances are formed in broiling; one is related to the tar in cigarette-smoke condensate and is produced when the surface of the food is charred; the other factor involves the breakdown of some amino acids in protein.

2.9 Carrageenan

An Irish moss derivative, carrageenan absorbs water easily, has a seaweed-like odor and a gluey, salty taste. It is used as a stabilizer and emulsifier in chocolate products, chocolate-flavored drinks, chocolate milk, gassed cream (pressure-dispensed whipped), syrup for frozen products, confections, evaporated milk, cheese spreads, cheese foods, ice cream, frozen custard, sherbets, ices, French dressing, artificially-sweetened jellies and jams.

Carrageenan results in the stimulation of the formation of fibrous tissue when subcutaneously injected into guinea pigs. When a single dose of it dissolved in saline was injected into the subcutaneous tissues of rats, it resulted in sarcomas after approximately two years. Its cancer-causing qualities may be that of

a foreign body irritant, because upon administration to rats and mice at high levels in their diet it did not appear to induce tumors, although survival of the animals for this period was not good. Its use as a food additive and as a treatment for gastric ulcers is being further tested.

2.10 Azo Dyes

A large category of colorings used in both food and cosmetics, azo dyes are characterized by the way they combine with nitrogen. They are made from diazonium compounds and phenol and usually contain a mild acid such as citric or tartaric acid. Among the foods in which they are used are "penny" candies, caramels and chews, Life Savers, fruit drops, filled chocolates (but not pure chocolates); soft drinks, fruit drinks and ades; jellies, jams, marmalades; stewed-fruit sauces; fruit gelatins; fruit yogurts; ice cream; pie fillings, puddings (vanilla, butterscotch, and chocolate puddings), caramel custard, whips, dessert sauces (such as vanilla and cream in powdered form); bakery goods (except plain rolls); crackers, cheese puffs, chips; cake and cookie mixes, waffle/pancake mixes; macaroni and spaghetti (certain brands); mayonnaise, salad dressings, catsup (Vermin brands); mustard, ready-made salads with dressings; remoulade, bearnaise and holladaise sauces, as well as sauces such as curry, fish, onion, tomato, and white cream; mashed rutabagas, purees; packaged soups, and some canned soups; canned anchovies, herring, sardines, fish balls, caviar and cleaned shell fish.

As far back as 1906 an azo dye, scarlet red, was found to cause tumors in rabbits in Germany. In 1924 it was reported to cause liver tumors in mice. In 1934 Tomizu Yoshida, professor of pathology at Tokyo University, Japan, reported liver cancer in rats that ingested azo compounds in their diet. Azo dyes have since been found carcinogenic in a wide variety of experiments worldwide, but they are still used in our food and cosmetics.

2.11 Sugar

Dr. Hieper has said: "In themselves, sugars may not be carcinogenic—but carcinogenic impurities may be introduced into sugars when concentrated. Sugar solutions are filtered for decolorizing purposes through improperly prepared charcoal containing polycyclic hydrocarbons. Chemicals of the dibenzanthracene type are eluted (washed out) from charcoal by concentrated sugar solutions. Traces may be introduced in this manner and may remain in apparently chemically pure sugars."

2.12 Saccharin

"Saccharin is a noxious drug, and even in comparatively small doses it is harmful to the human system," wrote Dr. Wiley in 1913. He tried to keep this nonnutritive adulterant out of food and drink.

As early as 1951, three FDA scientists reported that saccharin at certain levels showed a high incidence of unusual combinations of cancers. The FDA chose to ignore the report. In November 1969 Dr. George T. Bryan, a tumor expert and cancer researcher at the medical school of the University of Wisconsin, reported to the FDA that using saccharin, he had produced bladder cancer in 47% of the mice in one group, and in 52% of another group. In a press interview, Dr. Bryan admitted that although direct cancer hazard to man from saccharin has not yet been established, he was "very suspicious." He added, "It may take many years before it is known exactly how dangerous the substance is ..."

1. Pesticides

Most pesticides are poisonous and can be dangerous to the user, the environment, and the food consumer. Pesticides that reach the consumer generally do so by the oral route. Thus, stomach and bowel cancers are of particular interest to agronomic and agricultural scientists.

Pesticides may promote or induce cancer. Insecticides all are readily absorbed through the skin and may also be inhaled or ingested. Acute symptoms following massive exposure including vomiting; dizziness, tremors, and convulsions. Such exposure can be fatal. Other insecticides result in skin and lung irritation. Dithiocarbonates, a group of chemicals commonly used as fungicides, are highly irritating to the skin, eyes, and respiratory tract.

Tests for pesticides frequently establish the ability of the compounds to promote and induce cancer. A further complication is that of multiple carcinogens, a multiplier effect when one is added to another. The sale and use of some 2.000 pesticide products containing 23 potentially hazardous ingredients has been restricted by the EPA to farmers and commercial users.

1.1 Pronamide

This pesticide, used mainly on lettuce, alfalfa, and to a lesser extent, on berries, turf and sugar-beet seed, caused cancer in mice. On January 15, 1979 the FPA proposed that the continued use of pronamide be allowed, but with additional precautions lo reduce potential risks to humans. FPA Assistant Administrator Steven Jellinek said: "In general, EPA concluded that for all uses the economic benefits of pronamide outweigh its risks. Most pronamide is used on lettuce in California and Arizona, which produce most of this country's lettuce. Without pronamide, the estimated loss to lettuce and alfalfa growers would be approximately $17.3 million annually. Pronamide is used primarily as an herbicide to control weeds, which compete with lettuce and alfalfa. Other herbicides available for weed control of these crops are not always as effective, and for lettuce these uses would result in additional labor costs for growers who would have to control the weeds by hand or mechanically."

Organic gardeners will attest to the fact that highly poisonous sprays are not necessary to have a bumper crop of lettuce. A few weeds among the lettuce will do no harm but may distract or repel certain pests. There can never be any legitimate excuse for using sprays that are known to be harmful to the consumer. When weeds are controlled by hand or mechanically on a regular basis, they will not harm the crops and may in addition eliminate some unemployment .

1.2 Parathion

An organophosphorus pesticide, parathion was given in feed to rats and mice for 80 weeks. It was carcinogenic to the adrenal glands of male and female rats.

1.3 Nitrofen

Nitrofen is an agricultural pesticide used as a selective contact herbicide for pre- and post-emergent control of annual grasses and broad-leaf weeds on a variety of food crops. Agricultural workers and manufacturers are exposed through skin absorption and by inhalation. The general public is exposed through ingestion due to possible persistent residual quantities of nitrofen on food crops. Adverse effects on agricultural workers following excessive exposure over prolonged periods included a reduction of hemoglobin and white blood cell counts, inhibition of cholinesterase (an enzyme in the heart muscle) and abnormalities in red-blood and serum-enzyme levels. The chemical was given to rats and mice for 78 weeks. It proved to be a liver carcinogen in mice of both sexes and in female rats.

1.4 Maleic Hydrazide

Maleic hydrazide regulates the growth of unwanted "suckers" on about 90% of the United States tobacco crop and is also applied to 10 to 15% of domestic potatoes and onions to prevent sprouting after harvest. It is highly toxic to humans and has produced central nervous system disturbances and liver damage in experimental animals. It has led to liver and other tumors in some mice. It has resulted in genetic damage in plant and animal systems, a fact that often signals a cancer-causing effect.

1.5 ETU2-Imidazolidinethione

Cancer-causing ETU, a contaminant and breakdown product of some widely-used fungicides, can contaminate plants, whether sprayed onto leaves or mixed in the soil. Readily transmitted from roots to leaves, ETU persists for as long as two weeks. For this reason it is recommended that the fungicides called ethylenebisdithiocarbamates (EBDC), in use for 30 years, should not be applied to crops two weeks before harvest.

When ETU is given in large doses, it has been shown to be carcinogenic in rats, tumorigenic in mice, and teratogenic (fetus-deforming) in rats and mice. Reports have shown that cooked spinach contained more of the cancer-causing chemical than the corresponding raw spinach; an inadvertent addition to food of a carcinogen caused by the breakdown of remaining fungicide when heated. A heat-caused degradation product of widely-used EBDC fungicide, ETU is found 10 to 90 times higher in cooked tomatoes than in raw tomatoes. During cooking, the ETU presumably is formed from residues of the parent fungicides that are present on the food. The amount of ETU formed in the cooked produce varies with the parent fungicide and ultimately depends upon the amount of fungicide residue that remains on the harvested crops. Although the amount of ETU may drop to very low levels in 14 days, that is no reflection of the amount of this carcinogen that may be found in the cooked produce.

In addition, degradation products of unknown toxicity, for instance ethylene thiuram monosulfide, are formed from the EBDC fungicides in the field. Several toxicological studies have shown that ETU was carcinogenic in the thyroid of rats, tumorigenic in the liver of mice, and teratogenic in pregnant rats. Studies have also suggested an effect of ETU on the liver.

1.6 Dieldrin

Dieldrin is a neurotoxin (a toxin that destroys nerve tissue). First introduced by cotton growers in the 1950s, when the chemical was found to be more effective than aldrin, dieldrin has also been used as an insecticide on crops, for public health pest control, and for mothproofing woolen goods. The tests showed that there was a significant increase in the incidence of liver cancers in high-dose male rats and in cancer of the adrenal glands in low-dose female rats. Tumors occurred in the pituitary and thyroid glands in tests.

1.7 Chlorinated Hydrocarbons

Hydrocarbons in which one or more of the hydrogen atoms have been replaced by chlorine are called chlorinated hydrocarbons. Many members of the group have been shown to cause cancer in animals and some of them to cause cancer in humans. Among the designated carcinogens, chloroform, vinyl chlorides bis chloromethyl ether, trichlorethylene, aldrin, chlordane, dieldrin, heptachlor, lindane, methoxychlor, toxaphene, terpene polychlorinates, and carbon tetrachloride. Concern about the potential hazard of certain chlorinated hydrocarbons is based on their ubiquity; their persistence in the environment; their capacity to accumulate in living organisms, including humans and the human fetus; and the experimental evidence of a potential carcinogenic effect.

1.8 Chlordane

An organochlorine pesticide, chlordane was introduced in 1945 and was among the first to be developed for insect control. Because of its persistence in the environment, most of its uses were suspended by order of the EPA in 1975. Several specified uses are still permitted including pest control on pineapple, strawberries, and Florida citrus crops; it is also used for a number of other pest control problems.

Chlordane and heptachlor were once used at the rate of 14 to 16 million pounds per year. Current legal usage accounts for 6 to 8 million pounds per year. Chlordane causes cancer of the liver in mice. It is less toxic than other similar pesticides, but acute exposure has the effect of stimulating the central nervous system. It has also been implicated in acute blood abnormalities, such as aplastic anemia. It is said to be absorbed through the skin. It has been found to be mutagenic. Eventually, it will probably be banned entirely.

1.9 Atrazine

One of the most widely-used pesticides in the United States, atrazine reacts under acidic conditions such as those found in the stomach, to form a potential carcinogen. It is used as a weed-control agent for corn and for noncrop and industrial sites. Found in drinking water supplies in Iowa and Louisiana, atrazine reacts with nitrite to form N-nitrosoatrazine, a suspected carcinogen. Sodium nitrite is used as a meat preservative and may also be present in acid soils because of the large amounts of nitrite fertilizers used.

1.10 Amitraz

Amitraz is a pesticide used on pears in Washington, Utah, Oregon, Michigan, New York, and Pennsylvania since 1975 on an emergency basis to control an aphid-like insect called pear psylla. It is claimed that there is no effective alternative pesticide available to control the pear psylla, which is capable of damaging both the fruit and the trees. The EPA claims that without amitraz the economic losses to growers could be as high as $33 million for three years. On January 15, 1979, the EPA proposed to approve the pesticide on the condition that certain restrictions be imposed "to reduce potential risks to human health." They said that amitraz could be used on pears for four years, pending completion of additional laboratory tests by the manufacturer. The proposal follows a full-scale review of the risk versus benefits of using the pesticide on pears. There is some evidence that it may cause tumors in laboratory animals and therefore might present "a small risk of cancer to humans." As a result, EPA would require application only by trained users wearing protective clothing. To reduce residue levels on the fruit before it is marketed, EPA would require longer time periods from the time a crop is sprayed to the time it is harvested. Amitraz is distributed in this country by Upjohn of Kalamazoo, Michigan. It is estimated that about 120,000 pounds of it might be used on pears each year.

The facts still remain that this pesticide is extremely toxic and even in small doses are definitely harmful.

1. Environmental Carcinogens

Over the past 100 years, there has been a significant rise in life expectancy, particularly in the developed portions of the world. Since 1950, there have been no appreciable changes in life expectancy in the United States. The two leading causes of death in the United States, heart disease and cancer, have increased since 1900 at a rate much higher than may be accounted for by population growth and by

aging of the population. Environmental influences may already be factors in life expectancy and health in the United States.

Cancer has more than doubled since the turn of the century. Much of the increase may be attributed to cigarette smoking, but overall cancer rates exclusive of lung cancers are also rising.

Cancer has a long latency period. In humans there is usually a 15- to 40-year period through the progressive stages that eventually terminates in cancer. Increased levels of exposure to a carcinogen carry with them an increased risk of developing cancer, a single exposure to a chemical may also result in a cancer.

About two million chemical compounds are known, and each year thousands more are discovered by the U.S. chemical industry and hundreds are introduced commercially. We know very little about the possible health consequences of these new compounds. The sheer number of chemical compounds, the diversity of their use, and the adverse effects already encountered from some make it increasingly probable that chemical contaminants in our environment have become a significant determinant of human health and life expectancy.

It must be remembered that cancer is a disease of the whole organism. It possesses attributes ranging from unrestricted growth to invasiveness.

It is true that many agents that are mutagenic, that is, responsible for cellular mutation, are also carcinogenic, capable of inducing cancer, but a direct correlation between mutagenic and carcinogenic occurs within the cell and may initiate cancer. First, for a mutation to happen, an agent foreign to the cell constituents is needed. A number of agents are capable of resulting in cellular mutations and sometimes ultimately cancer.

We can thus distinguish three steps in the development of cancer:

1. Initiation (or the first change).
2. Promotion (from the dormant to the visible stage).
3. Progression (leading to the irreversible state).

All normal cells have a finite life span. The normal cell divides in two at a constant rate, then the two daughter cells into four, and so on, but along the road of reproduction some of the cells die at a constant rate equal to the rate of reproduction. Balance is therefore maintained. But not so for cancer cells. They do not have a finite life span. Nor do they die in the same proportion as those that reproduce.

Uncontrolled growth, or geometric, not linear, reproduction occurs, the outstanding characteristic of cancer cells. The volume of the growing tissue continuously increases, and balance in number and volume is not maintained. In this first step toward cancer the transformed cells have escaped the controls and balances which govern normal cells.

Once a neoplastic cell has reached the stage of progression, the third, stage in carcinogenic growth, it is a cancer cell forever. But, before that stage, the neoplastic transformation may be reversible. The first step, initiation, or mutagenesis, does not necessarily lead to cancer; if the second stage (promotion) fails to take place, the third and definitive stage will not be attained. In other words, the initial change in the DNA of the cell may not be permanent or irreversible. In this case, if the cause of the cell irritation is removed, the cell will repair and resume normal function.

If we think of the process of neoplastic transformation in terms of the interaction in the cell of DNA, RNA, and protein, we could say that the primary change, or initiation, occurs in the base sequences of DNA; the second step, promotion, and the third step, progression, would be expressed in the perpetuation of the change as DNA replicates itself.

1.1 Chemical Carcinogenesis

It is probable that a high proportion of human cancer, perhaps 60 to 90% is due to environmental causes.

Cigarette smoke, atmospheric pollution, and various other materials in our environment contain certain hydrocarbons which can produce cancer. For centuries some meats have been conserved in salt and it has been found that the nitrates present in meat cured in this way can also be carcinogenic.

Chemical carcinogenesis is generally a two-stage process as mentioned above consisting of, first, initial ion. and second, promotion. An example of this double process is to be found in the relationship of croton oil and polycyclic hydrocarbons to skin cancer. Croton oil alone rarely produces skin cancer but if a single dose of a polycyclic hydrocarbon is applied to the skin of an experimental animal and if this is then followed by an application of croton oil, skin cancer frequently occurs: the polycyclic hydrocarbon acts as an initiator and the croton oil as a promoter of the cancer process. Observations of this type are pertinent to human cancer since we know that our natural environment contains a number of chemical carcinogens. It is logical to assume that even a low level of these chemicals might serve as initiating agents, and that association with promoting agents could result in cancer.

1.1.1 Asbestos

The naturally-occurring fibrous silicates classified as "asbestos" now are believed to be the most deadly cancer-causing agents in the workplace. There has been a thousandfold increase in output of asbestos during the past 50 years, and although it has been known for more than half a century that persons who inhaled large amounts of it in the course of their work sometimes developed disabling or fatal fibrosis of the lungs, it has only been within the last 30 years that it has been found to cause cancer. It is estimated that as many as 3,000 different products in daily use throughout the world contain some asbestos

The first suggestion that it could cause cancer was raised in 1935 by two physicians who noticed a correlation between asbestosis, a condition caused by fibers remaining in the lungs, and lung cancer. The link was definitely established around 1960 when Mt. Sinai School of Medicine researchers found that asbestos was the cause of mesothelioma, a rare and always fatal cancer of the membranes surrounding the lungs and lining of the abdominal cavity. Cancer of the stomach has also been found among American insulation workers and among the Japanese who like to eat rice coated with talc, a substance usually contaminated with asbestos. Asbestos has also been linked with cancer of the larynx, and a study by the American Cancer Society showed that asbestos workers who smoke may be 92 times more likely than the average nonsmoker to develop lung cancer. Even relatively brief exposure can increase the risk of cancer 20 to 40 years later.

Asbestos has been found in the air we breathe. An estimated 158,000 pounds of this mineral is released from automobile brake linings every year, and thousands of schools and other buildings have been constructed with asbestos insulation and flame proofing.

Dr. Irving Selikoff of Mt. Sinai School of Medicine, one of the world's leading experts on asbestos, says that a worker could be exposed heavily to asbestos for one day and develop cancer much later in life as a result, because his lungs continue to be exposed to the asbestos fibers deposited there.

Altogether, 2.5 million Americans are now working in trades involving asbestos, including asbestos mining and processing, insulation work, building demolition, and brake-clutch repair.

The modern home has asbestos from roof to basement—asbestos roofing or roof tiles, gutters, rainwater pipes, ceiling and floor tiles. The tiles, even if polished, are subject to wear and tear and presumably the liberation of asbestos. The instances of plural disease, one of them mesothelioma, have been found in workers who sanded asbestos floor tiles. Central-heating furnaces and pipes insulated by asbestos are common. Insulation of electrical equipment in the home, such as electric irons and stoves, is almost always compounded with asbestos. Ironing-board covers are made from the substance.

The latency period for asbestos-caused cancer is from four to fifty years. It primarily appears in the lungs, pleural cavity, gastrointestinal tract, ovary, skin, liver, and larynx.

1.1.2 Air Pollution

Polluted air affects the health of human beings and of animal and plants. Emitted pollutants are diluted in the atmosphere and swept away by winds, except during an inversion (when surface air cannot rise). Then, for a period that varies from a few hours to a week or more, pollutants are trapped and the dilution process is impeded. When an inversion persists for a week or more, pollution intensifies substantially, and there is an accompanying increase in the death rate. Scientists are convinced that air pollution is very definitely a factor contributing to the three major types of diseases that result in sickness and death in our country—heart disease, lung and respiratory diseases, and cancer. Studies have shown that air pollution can actually be hazardous to people who live 50 to 100 miles away from the pollution source. This is because some common pollutants while moving through the atmosphere are transformed by chemical reactions with sunlight into more hazardous pollutants, such as photochemical oxidants that poison the lungs and respiratory system. Sulfur oxides aggravate asthma, lung and heart diseases, and lung functions of children. The amount of suspended particles in the air is related to injury to the surfaces of the respiratory system, that is, to the linings of the lungs and throat. Chemicals carried into the lungs by particulates may cause cancer to develop on the lung lining. Carbon monoxide is harmful to persons who have lung disease, anemia, or cerebral-vascular disease. Photochemical oxidants may cause respiratory irritation and even changes in lung function. Nitrogen oxides in high concentrations can be fatal, and in lower concentrations they can cause acute bronchitis and pneumonia.

Air pollution accounts for a doubling of the bronchitis mortality rate for urban as compared to rural areas. In 1958 the rate of death from lung cancer was 1.56 times as high in the urban areas as in the rural areas. Stomach cancer is related significantly to a deposit index and a smoke index. The mortality rate due to stomach cancer is more than twice as great in areas of high pollution as in areas of low pollution. The mortality of all cancers is 25% higher in polluted areas than in areas of relatively clean air.

Cigarette smoke and automotive exhaust, the most common environmental air problems, are composed of gases, liquid and solid aerosols. Personal pollution from smoke is the main cause of respiratory cancer. Municipal incinerators are major sources of several toxic elements in the air of many cities. Refuse incineration can account for major portions of zinc, cadmium, antimony, and possibly silver, tin, and indium observed in airborne particles. Many of the toxic elements from incinerators are associated with predominantly small particles that can be easily inhaled into the lungs, where these poisonous elements can be dissolved in body fluids and transported about the body.

The impact of air pollution on humans generally increases with age. This indicates that air pollution has a cumulative effect on health.

It has been estimated that 25% of the deaths from lung cancer could be saved by a 50% reduction in air pollution.

1.1.3 Water

Drinking water that comes into your home may be the greatest source of cancer-causing agents to which you are exposed. There are thousands of organic chemicals potentially present in our water supplies due to industrial discharges and spills. The use of agricultural chemicals, industrial discharges and spills, and the runoff of rainwater from cities present a growing pollution problem. Groundwater—subsurface water supplied by springs, lakes, and rivers—can be polluted by surface waters, deep-well disposal, seepage from mines, landfills, septic tanks, feedlots, and pesticides. Groundwater supplies 20% of the freshwater used in the United States. It constitutes the entire water supply of more than 95% of the rural population and 20% of the 100 largest cities in the country; the semiarid Southwest is almost completely dependent upon groundwater. It is estimated that 10 million barrels of brine are injected into underground reservoirs by the gas and oil industry. While relatively little is known about the chemicals that pollute our water, it is known that many of them do cause cancer in test animals.

The NAS committee noted that chlorination results in the formation of suspected carcinogens for

humans. Lead toxicity, the committee said, is a particular risk for inner-city children. Consequently, the interim drinking-water reputations for lead—established under the Safe Drinking Water Act in 1975—may provide an adequate margin of safety for adults but not for urban children. Similarly, they noted, present data support reexamination of the margins of safety provided by interim drinking-water limits for nitrate, arsenic and selenium.

1.1.4 Polycyclic Hydrocarbons

The polycyclic hydrocarbons are members of a broad class of chemicals produced by incomplete combustion of organic matter. Cigarette smoke, vehicle exhaust, forest fires, and even charcoal-broiled meat have been shown to contain substantial quantities of these potent carcinogens.

1. Smoking And Cancer

In the early part of the sixteenth century, explorers returning from the New World brought tobacco to Spain and England. The introduction of tobacco was in response to man's search for contentment; indeed pipe smoking, tobacco chewing, and the use of snuff were reputed to have medicinal action. But, since the earliest times, smoking has also been condemned as a foul-smelling, loathsome custom, harmful to health. The centuries-long controversies became particularly intense after 1930, when the production and use of tobacco, especially of cigarettes, reached enormous proportions and increasing deaths from lung cancer were becoming evident.

Based on evaluations of detailed epidemiologic, clinical, autopsy, and experimental data accumulated over the last 30 years, cigarette smoking has been clearly identified as a causative factor for lung cancer. The risk of developing lung cancer increases directly with increasing cigarette smoke exposure as measured by the number of cigarettes smoked per day, the total lifetime number of cigarettes smoked, the number of years of smoking, the age at initiation of smoking, and the depth of inhalation. Lung cancer death rates for women are lower than for men but have increased dramatically over the last 15 years coincident with the increasing number of women smokers. This increase has occurred in spite of the fact that women smokers use fewer cigarettes per day, more frequently choose cigarettes with filter tips and low tar and nicotine delivery, and tend to inhale less than men. A person who stops smoking has a decreased risk of developing lung cancer compared to the continuing smoker, but the risk remains greater than the nonsmokers for as long as 10 to 15 years after the person stops smoking.

Dr. Alton Ochsner, a nonsmoker and a renowned surgeon who has operated on many patients with lung cancers, has said (1954): "Cigarettes cause cancer ... Indeed in view of research by the American Cancer Society, the National Cancer Institute, the National Institutes of Health, and scores of independent scientists throughout the world, it is appalling that anyone could, doubt the shocking link between smoking and a dozen major health problems."

Lung cancer is not the only cancer to be-associated with smoking. If women are relatively spared by lung cancer, they are not spared by cancer of the larynx. Warren H. Gardner (1966) says that 70% of the women included in his study of laryngectomized women had been smoking until the time of surgery, and that one woman, who had started smoking at age eleven, had been smoking four packs of cigarettes a day for 35 years.

Pipe and cigar smokers experience mortality rates from cancer of the oral cavity, larynx, pharynx, and esophagus approximately equal to those of cigarette smokers. Their risk of developing cancer of the lung is lower than the risk of cigarette smokers, but it is significantly above that of nonsmokers. This is

probably due to the fact that pipe, cigar, and cigarette smokers experience similar smoke exposure of the upper respiratory tract, while cigarette smokers (due to their greater tendency to inhale) have a greater exposure of their lungs to smoke than pipe or cigar smokers.

The bronchial epithelium of smokers often shows pre-malignant changes such as squamous metaplasia, atypical squamous metaplasia, and carcinoma. The pathogenesis of these changes is related to the various carcinogenic and co-carcinogenic substances in cigarette smoke; the exact mechanism of these carcinogens remains under investigation.

A recent study found that passive smoking from side-stream smoke increases a person's risk of developing lung cancer. The report states that the probability of nonsmoking wives to develop lung cancer is linked statistically to the smoking habits of their husbands. The relative risk of developing lung cancer was even higher in certain subgroups of nonsmoking women with husbands who smoke—notably those in agricultural settings—further strengthening the evidence that the lung cancers of nonsmoking women were due to their husbands' smoking, not to air pollution.

1. Other Carcinogens

1.1 Sorbic Acid

Sorbic acid consists of a white free-flowing powder that is obtained from the berries of the mountain ash and is also made from chemicals in the factory. It is used in cosmetics as a preservative and humectant. A mold and yeast inhibitor, it is also used in foods, especially cheese and beverages. It is also used as a replacement for glycerin in emulsions, ointments, embalming fluids, mouthwashes, toothpastes and various cosmetics. A binder for toilet powders and creams, it produces a velvet-like feel when rubbed or, the skin.

When injected subcutaneously in 2,600 milligrams doses per kilogram of body weight, it causes cancer

Sorbic acid is often added to dried fruit, so be sure to read the labels when purchasing packaged fruit.

1.2 Plastic Food Wrap and Packaging

Plastic food wrap is a petroleum product and is not biodegradable. Some wraps create toxic smoke when burned. In 1975 the FDA approved a plastic acrylonitrile Coke bottle. But in 1977 rats fed large doses of acrylonirile lost weight and developed abnormalities, such as lesions of the central nervous system. Another study showed migration of the chemical into the contents after the Coke bottle was kept at a temperature of 120 degrees for six months. The FDA proposed a ban on the product.

An FDA official noted that acrylonitrile is not the only troublesome chemical. Some types of polyvinyl chloride (PVC) packages are also carcinogens. PVC liquor bottles were prohibited in 1973, although PVC is used in other packages. Other commonly-used plastics in the $15 billion a year food-packaging industry are also toxic.

1.3 Hair Coloring

More than 33 million Americans use hair coloring in an effort to cover gray or to change their appearance. Permanent hair-coloring products change the color of the hair. They cannot be shampooed away but remain until the hair grows out or is cut off. There are basically three types: natural organics,

synthetics, and met allies.

Researchers at NCI tested hair-dye chemicals for their ability to cause cancer by feeding them to rats and mice. Preliminary results showed that six hair-coloring ingredients are indeed carcinogenic in animals: 4-methoxy-m-henylenediamine, 4-MMPD (commonly used in permanent hair color); 2,4-toluene diamine (used in a few permanent hair colors); 4-amino-2-nitrophenol and 2-nitrophenylenediamine (used in many gold and reddish shade highlighters); direct black 38 and direct blue 6 (no longer manufactured).

Bruce Ames reported in 1977 that 150 of the semipermanent hair dyes he tested were mutagenic. An estimated 70 to 70% of the substances that are known carcinogens show up as mutagens in his test. In January 1978 NIOSH reported that a new study of beauticians and cosmetologists show they have a higher than expected incidence of six kinds of cancer. That study, along with NCI's findings, led NIOSH to recommend that 2,4,diaminoanisole be treated as a human carcinogen. On April 6, 1978, the FDA issued an order that manufacturers place a warning on the label of some permanent hair dyes that reads: "Warning: contains an ingredient that can penetrate your skin and has been determined to cause cancer in laboratory animals."

Do not use any kind of hair colorings. There is nothing more beautiful than your natural color.

1.4 Cosmetics

In relation to cosmetics, we read that "in spite of the progress made, some carcinogens are probably still present in toilet or cosmetic preparations." Not all the dyes used in lipstick and other materials have been subjected to adequate biological tests. Chloroform, which induces liver tumors in mice, still appears to be added to some toothpaste as a flavor.

Estrogens are used in some skin creams. The use of these preparations was approved provided that they were used only by women aged over 30 years, that they did not contain more than 350 international units of estrogenic hormone per gram, and that not more than 15 grams of preparation were used per week. However, the administration of even small amounts of (estrogen to post-menopausal women might facilitate the growth of hormone-dependent mammary cancer. Hormone creams should not be used by anyone. They can upset the endocrine system and result in a host of problems.

1. Cancer Therapy

1.1 Cancer Chemotherapy

The concept of curing cancer by the administration of a drug is erroneous. It is the outgrowth of the development of drugs to "cure" infections based on the false concept of invasion by bacteria.

The difference between a normal cell and cancer cell is not comparable to the difference between a bacterium and the host, and the drugs that affect cancer cells also affect normal cells in the same host. It is therefore apparent that treatment of malignant diseases which are disseminated, such as metastatic cancer, leukemia, lymphomas, or any other widespread cancer, would, under the theory, require an agent capable of diffusing throughout the body in uniform concentrations.

The treatment of cancer by drugs is called the chemotherapy of cancer. The outstanding shortcoming of such methods is the failure of the drugs to destroy the cancer cells specifically without simultaneously

seriously damaging the host.

Cancer chemotherapy has been under intensive development during the past 25 years. Physicians claim that this drug therapy has resulted in "cures"—occurring in mostly uncommon tumors—but apply the theory in treating common ones in the hope of "curing" all types of cancer. The entire concept is false since the body can never be poisoned into health. Symptoms may be suppressed, and where the disease was in the sixth stage (induration) there may be some false signs of "cure." But such illusionary recoveries never result in a state of health. As with all diseases, suppression of one symptom results in a worsened condition that may reappear in the same location or elsewhere. Thus, drug therapy during the tumorous sixth stage could hasten cancer.

1.1.1 Principles of Therapy

Cancer chemotherapy rests on the pretense that anti-tumor drugs are more efficient in killing tumor cells during DNA synthesis and active division; that is, they are more active against cycling than against noncycling cells. Some tumors are said to be "cured" by drugs because the majority of their cells, at any given moment, are making DNA and dividing (i.e., have a large growth fraction). When a drug reaches the tumor, the great majority of the cells in these phases of the cell cycle die. When the tumor is young, most of its cells are making DNA; as it ages, the growth fraction decreases, growth is slowed, and drug sensitivity is reduced. The "curable" tumors are said to be those that are in the early stages while their cells are in the growth fraction.

Nonresponsive tumors are said to be those that are old and have low-growth fractions. They are then given combined systemic chemotherapy with surgery and radiation. These are said to be effective means of removing the old portions of the tumor. Under this theory, chemotherapy kills the two categories of tumor cells left behind following local removal—the microscopic nests of cells in the tissue planes adjacent to the primary tumor left outside the surgical margin, and clinically in apparent distant metastases. Both categories of cells are in the infancy of their growth cycle and are highly susceptible to drugs given after surgery. However, old, large tumors are more likely to contain so-called "drug-resistant cells" because the large number of cells divisions is accompanied by the development of so-called drug-resistant mutants, especially if the cells have been exposed to chemotherapeutic agents.

Normal tissues that have a high percentage of cells synthesizing DNA, such as the hair roots, hematopoietic tissues, and the various GI epithelia from mouth to rectum, are also destroyed by chemotherapy.

The body creates 10,000,000 new blood cells per second. It has some 25 trillion blood cells, and their average life expectancy is about thirty days, so the body is constantly renewing itself with new cells. This means that at any given time, cells are in the state of division. Since chemotherapeutic drugs are systemic poisons, every cell and tissue of the entire body is affected. There is some damage and destruction done to trillions of healthy cells from this therapy.

In addition to killing cells during DNA synthesis or during physical mitosis, most drugs have a variable secondary killing capacity for cells in other stages of the cell cycle. A combination of drugs are given to eradicate cells in these stages of the cell cycle and it is given more intensively and for relatively long durations. Thus, more normal healthy cells are killed along with cancer cells.

In a 1981 article in In *These Times*, Ellen Cantarow states that the drugs that "cure" the rarest kinds of cancer, and which still are given for the common sorts, are themselves highly toxic to bone marrow, lungs, kidneys, heart and stomach. They cause horrible nausea, and they erode the lining of the mouth and throat. One of the ironies of treatment is that it is carcinogenic in itself.

The large American cancer institutions don't advertise such facts. Nor do they tell you that "surviving" beyond the magic five-year mark laid down as the finish line for a "cure" may mean having your hair fall out, your body mutilated, and being in pain and depression.

The American cancer establishment is bound up tightly in the multinational industrial complex. For instance, some dozen of the overseers of the world's largest private cancer center, Sloan-Kettering, are affiliated with companies like Exxon, American Cyanamid, Texaco, and Union Carbide, all major petro-chemical corporations responsible for spewing billions of tons of carcinogenic chemicals into the air we breathe, the earth in which we plant our fruits and vegetables, and the water we drink.

1.2 Chemotherapeutic Agents

The chemical agents used in the treatment of cancer have a wide variety of biological effects on cells. They can have a direct effect upon the DNA of the cell nucleus, or they can interfere in the transfer of information from the DNA to the messenger RNA with the subsequent alteration of protein synthesis by the cell. They can chemically interfere with the mitotic processes of cells. They can interfere with the formation of hormones which are essential to the life of the cancer cell. In general, there are four major classes of drugs which are useful in blocking the synthesis of particular proteins or enzymes. These are (1) the alkylating agents, (2) the antimetabolites, (3) the steroid hormones, and (4) miscellaneous compounds with specific blocking effects.

2. Antitumor Drugs

2.1 Alkylating Agents

These drugs were developed from wartime research on mustard gases. They interfere with cellular DNA preventing mitosis. Most of these drugs are absorbed after oral administration, but a few are given intravenously. They distribute to all tissues and are toxic to the bone marrow and are in themselves carcinogenic and mutagenic. Some of the agents have additional adverse effects.

Mustard gas is a highly toxic and deadly gas that causes conjunctivitis, blindness and death. Its vapor is extremely poisonous and can be absorbed through the skin. It causes cancer of the bronchi in workers exposed to it and cancer of the lung, larynx, trachea, and bronchi in cancer patients treated with it.

2.2 Antimetabolites

Antimetabolites inhibit a metabolic pathway essential for the viability or reproduction of a cancer cell. No metabolic pathway is unique for cancer cells so all body cells are affected.

Methrotrexate - This drug is toxic to the bone marrow. In addition, it is toxic to the orogastrointestinal epithelium, and two to seven days after administration one often sees oral reddening and ulceration, nausea, and vomiting. Diarrhea, dysphagia, and gastrointestinal bleeding may result as more serious effects. Skin rashes and baldness occasionally are seen. With very large doses, hepatic damage or renal damage progressing to uremia may occur. Prolonged usage is associated with liver damage with a cirrhosis-like syndrome. Leukoencephalopathy (abnormal amount of white blood cells in the brain) may occur.

6-Mercaptopurine (6MP) and 6-thioguanine (6TG) -Toxicity consists of bone marrow depression and orogastrointestinal damage similar to that seen with methotrexate.

Cytarabine (ARA-C, arabinosylcytosine) - A marked bone marrow depressant; causes lesions of orogastrointestinal epithelia, and occasionally gives rise to hepatic and renal toxicity.

5-Fluorouracel (5FU) - This drug can cause devastating bone marrow and gastrointestinal toxicity. Baldness, skin rashes, or cerebellar dysfunction are also noted.

Dacarbazine (DTICJ) - Toxicity includes bone marrow depression, gastrointestinal erosions, marked vomiting, and occasionally an influenza-like syndrome.

2.3 Antibiotics

A number of antibiotics have antitumor effects. Some are complex alkylating agents; the remainder are rather large molecules that bind to DNA.

Dactinomycin (actinomycin D) - Toxicity includes bone marrow depression, orogastrointestinal ulceration, nausea and vomiting, and baldness. A specific effect is a severe skin reaction wherever there has been previous (or concomitant) radiation.

Doxorubicin (adriamycin) and Daunorubicin (daunocycin, rubidomycin) - Toxicity includes bone marrow depression, baldness, and orogastrointestinal reactions. They also can result in cardiac failure, often severe and irreversible. Apparently the drugs accumulate in cardiac muscle and result in severe cardiac damage if a certain total dosage is exceeded.

Bleomycin - Bleomycin results in erhythema, pain, and hypertrophic changes in the skin in areas where there is a lot of keratin, and ulceration in these areas and pigmentation of the nails may occur. Pulmonary fibrosis, which is sometimes fatal, occurs in 5 to 15% of patients who receive more than 100 mg/m2. Patients are often given as much as 300 mg/m2.

Mithramycin - Bone marrow toxicity is marked. Mithramycin also results in bleeding by depressing the coagulation factors manufactured by the liver, and it inhibits the activity of osteocytes, depressing serum levels of calcium.

2.4 Alkaloids

Vincristine and vinblastine - Both drugs result in baldness and bone marrow depression. Both drugs have neuromuscular toxicity (which is more marked for vincristine) leading to severe constipation, paresthesia, loss of reflexes and weakness of extremities.

2.5 Miscellaneous Compounds

Procarbazine - In addition to nausea, vomiting, and bone marrow depression, there are neurologic effects—somnolence, confusion, and cerebellar ataxia.

Hydroxyures - Its main toxicity is bone marrow depression.

Asparaginase - Asparaginase results in many serious toxicities in man, especially in those organs that synthesize large amounts of proteins, such as the liver and pancreas. Liver toxicity is moderate, but an occasional patient will develop pancreatitis. There are occasional central nervous system manifestations and, because it is a protein given IV, some people (about 5% develop "allergic reactions" (severe sensitivities) and sometimes anaphylatic shock.

Mitotane (ortho, para-DDD) - This drug is related to DDT and is especially toxic to the cells of the adrenal cortex. Lethargy and somnolence occur in some people; less common effects include skin rashes, bone marrow depression, and liver damage.

Cisplatin - In addition to severe nausea and vomiting and hematologic depression, its effects include renal damage and ototoxicity.

As you can see, rather than "curing" anything, these drugs make it virtually impossible for the body to heal itself. The drugs are so toxic that the body must use its energies to try to eliminate or detoxify these poisons. In its weakened condition, the body becomes overcome by the toxins and permanent damage

often results.

3. Radiation Carcinogenesis

There is clear evidence that radiation can result in cancer in human beings. Although at present the number of tumors induced by artificial radiation constitutes only a very tiny fraction of all human cancer, the potential will increase because of increasing use of radioactive substances in industry and medicine.

Irradiation of cells by X rays, ultraviolet light, and other physical sources can be broadly categorized into two pathological results:

1. Direct mutagenic effects—an immediate physical or chemical event at the molecular level, within the fraction of a second.
2. Indirect mutagenic effects—an alteration of a normal balance within the organism and a subsequent neoplastic transformation in the cell through loss of normal resistance or control.

3.1 Direct Effect of Irradiation on Cells

Physical particles, such as X rays, gamma rays, fast electrons, alpha particles, and ultraviolet particles, carry high amounts of energy and when they strike a cell, a direct change occurs in the cell's chemical organization and genetic structure.

The nucleus of the cell is far more responsive to radiations than its cytoplasm and in the nucleus itself the RNA is the macromolecule affected. It is therefore logical that the function of the cell most sensitive to radiation is the reproductive one since it is engineered by the nuclear DNA.

3.2 Indirect Induction of Cancer by Radiations

Dr. Henry Kaplan and his associates at Stanford University (from 1950 to 1970) have done the most to elucidate the mechanism of irradiation induction of cancer in mice. He has essentially proven that the induction of cancer by irradiation is an indirect, not a direct, mutagenic effect. Lymphatic leukemia of the thymus in mice can be induced only if the thymus is irradiated following irradiation of the mouse's entire body.

When the upper part of the body alone was irradiated, the spleen and bone marrow cells acted as protective agents against the induction of cancer. When the bone marrow and the spleen were also irradiated, their protective capacity was annihilated and the mice developed thymic tumors.

3.3 Effects of Radiations

The indirect induction of cancer by radiations also has implications in man, particularly with respect to human leukemia.

The carcinogenic effects of irradiation have been shown for a variety of cancers in man. Sarcomas occur from ingestion of radioactive isotopes, such as those deposited in the long bones of radium dial painters; pulmonary carcinomas in underground mine workers result from exposure to alpha radiations in high concentration', from radon in the air of underground mines. In addition it is possible that polonium, existing in low doses in tobacco, is a carcinogenic agent in cigarette smoke.

Patients treated by irradiation for ankylosing arthritis of the spine and the survivor; of the Hiroshima und Nagasaki atomic blasts show an increased or excessive incidence of leukemia. Breast cancer is more frequent in women undergoing multiple fluoroscopic examinations in the treatment of pulmonary tuberculosis. A single x-ray film of the abdomen of a pregnant woman produces a significant increase in the incidence of cancer, including leukemia, in the child.

4. Laetrile

Laetrile is a controversial drug used to treat cancer. Most physicians oppose the use of Laetrile but supporters of this drug claim that it has halted or even "cured" cancer in many patients.

Laetrile is extracted from apricot pits. Certain enzymes in many foods break down Laetrile. During this process, a poisonous substance called cyanide is released. The supporters of Laetrile claim that the enzymes are also present in cancer cells. They believe that after Laetrile is injected in to the bloodstream of a patient, cyanide is released in the cancer cells and kills them. According to this theory, healthy body cells are not affected because they do not contain the enzymes that break down Laetrile.

Laetrile is, usually administered by being injected into the bloodstream. However, some cancer sufferers take Laetrile pills, which are broken down in the stomach by certain enzymes. Cyanide poisoning, which can be fatal, often results.

Cancer patients who discontinue orthodox treatment and begin Laetrile treatment experience improvement, for several reasons. One of the major reasons is the discontinuance of the harsh and very harmful and enervating treatments of drugs, X rays, radium, etc. Laetrile, although toxic, is less so than the chemotherapy and therefore, the body has less poisons to deal with and more energy can be directed toward healing. Also, most often, a much improved dietary regime is commenced at the same time along with other healthful practices. Another reason for rapid improvement, is the possibility that there was a misdiagnosis and the person did not actually have cancer but the disease was still in the sixth and reversible stage. If the person now makes a complete recovery and health is restored, the recovery is accredited to the Laetrile. This is a false assumption. Laetrile has no ability to heal, but the body did the healing when the burdens of the chemotherapy, etc., were lifted and a more healthy lifestyle was adhered to. Recovery would be more rapid and complete, however, under a Hygienic regime.

Questions & Answers

Can breast cancer be directly related to diet?

> Yes, Dr. John Minton of Ohio State University found that the primary causes of breast cancer in women are coffee, tea, chocolate, colas and other caffeine-dosed foods and drinks. Dr. Minton withdrew women with breast lumps from their usual diet and gave them a diet that consisted primarily of organically-grown natural foods. On this improved diet, pain, swelling and lumps disappeared within two to six months. This worked in 47 women who cooperated with Dr. Minton.

Has anyone found that a high fat diet is linked to cancer incidence?

Dr. David Kritchevsky of Philadelphia's Wistar Institute of Anatomy and Biology says that his institute's tests link fats to cancer. It doesn't matter if the fats are saturated or unsaturated. They cause cancer, especially of the colon and breast. Americans eat about 42% of their total calories in the form of fats. About 25% of 1592 Americans will have cancer and most of them will die of it. For years promoters of unsaturated vegetable oils have praised the value of their product. But it now has been proven that unsaturated vegetable oils will cause cancer just as much as animal fats. When these oils are heated, they become even more carcinogenous. When heated, they generated acrolein and acrolic acid—both deadly carcinogens

Your total fat intake should be in your ingestion of such foods as nuts, seeds, avocados and what minute amounts may be found in fruits and vegetables.

I heard that cabbage is good "anti-cancer" food. Is this true?

The concept that foods can "act" as healers is erroneous. It is true that people who eat cabbage along with an abundance of other fresh vegetables and fruits have a very low incidence of cancer. This is not because there is any "medicinal" property to these foods but simply because they are good foods. Their use will result in good health and therefore cancer will not develop.

Can condiments cause cancer?

In 1979, a scientist, Jose M. Concon of the University of Kentucky, made public his findings about a wide variety of flavorings and condiments including cinamon, vanilla, anise, black pepper and a large number of other commonly-used condiments. Dr. Concon gave these condiments to mice and observed malignant tumors develop in them, often in several organs simultaneously, Control mice fed the same diet otherwise did not develop tumors. Our best advice to you is to eschew all condiments.

I recently read that vitamin C can cure cancer. Is this correct?

No, vitamin C has no property to "cure" anything. Dosing with vitamin C in excess of the body's relatively low needs will not confer health. But this can interfere with normal body functions and result in disease. Dosing with vitamin C in response to colds, influenza and cancer does not furnish the body with a nutrient it needs—under an ailing condition it can utilize less nutrients and food than it did when it was unimpaired. What dosing amounts to is drugging.

Article #1: Autolyzing Tumors by Dr. Herbert M. Shelton

The word autoloysis is derived from Greek and means, literally, self-loosing. It is used in physiology to designate the process of digestion or disintegration of tissue by ferments (enzymes) generated in the cells themselves. It is a process of self-digestion.

Enzymes exist throughout nature. All organic processes are accomplished by their aid. Seeds sprout by

the aid of enzymes. Every tissue has its own enzyme.

It is now common knowledge that the processes of digestion that take place in the mouth, stomach and intestine are made possible by active agents or ferments known as enzymes. For instance, starch is converted into sugar by digestive enzymes that are said to be starch splitting, or amylolytic; proteins are converted into amino acids by protein-splitting, or proteolytic, enzymes. The digestive enzymes digest only "dead" substances and therefore, do not digest the stomach and intestine.

Acids and alkalies do not accomplish the work of digestion. They only supply favorable mediums for the work of the digestive enzymes. The enzyme, ptyalin, of the saliva acts only in an alkaline medium and is destroyed by a mild acid; the enzyme, pepsin, of the gastric juice works only in an acid medium and is prevented from working by an alkali.

It should be equally well known that the chemical changes that take place in the cells and tissues are instigated by enzymes, of which there are a number in every living thing. Simple sugar (monosaccharide) is absorbed from the intestine and carried to the liver where it is converted, by an enzyme, into glycogen (animal starch) and stored until used. When the body needs sugar, the glycogen is reconverted into sugar, again by enzymic action. It is now general knowledge that insulin secreted by the pancreas is necessary to the metabolization (oxidation) of sugar and that when the pancreas fails to turn out sufficient insulin, unoxidized sugar is excreted in the urine.

A number of autolytic enzymes are known and are included under the general terms, oxidases and peroxidases. Physiologists know that proteolytic (protein-digesting) enzymes are formed within many, if not in all, living tissues.

These various intracellular enzymes play a conspicious part in the metabolism of food substances; that is, in the normal or regular function of nutrition or metabolism. A few familiar examples of autolysis will prepare the reader for what is to follow about tumors.

When a bone is broken, a bone-ring support is built around the fractured section, extending each way from the point of fracture. After the bone is reunited and knitting or healing is completed, and the circulatory channels are reestablished, the bone-ring support is softened and absorbed, except about a quarter of an inch about the point of fracture.

If planaria, or flat worms, are cut into small pieces and placed where they can absorb nourishment, each piece will grow into a small worm. If they cannot get nourishment, they cannot grow. Each piece, therefore, completely rearranges its materials and becomes a perfect, but very minute worm. The piece that contains the pharynx, finding this too large for its diminished size, will dissolve it and make a new one that fits its new size.

The manner in which an abscess "points" on the surface of the body and drains its septic contents on the outside is well known to everyone of my readers. What is not generally known, is that this "pointing" on the surface is possible only because the flesh between the abscess and the surface is digested by enzymes; that is, it is autolyzed and removed.

Certain animals have specialized stores in which they store up a reserve of nutrition to feed them during periods of scarcity or during hibernation. These physiological storehouses are analogous to the "water tank" possessed by the camel. Examples of this are the big-tailed sheep of Persia, the gila monster of our Western plains and the Russian bear. Other animals, including man, possess only the generalized reserves found in the bone marrow, liver, blood, fatty tissue, etc., and the private reserve possessed by each cell in the body.

Both types of animals may draw upon these reserves for supplies with which to nourish their vital tissues, if raw materials from without are not to be had; or, if, due to sickness, they cannot be digested.

These tissues (fatty tissue, bone marrow, etc.) and food substances (glycogen) are not fit to enter the bloodstream before they are acted upon by enzymes. Indeed human fat, or human muscle is no more fitted to enter the circulation without first being digested, than is fat or muscle from the cow or sheep.

Glycogen (animal starch), stored in the liver, must be converted into a simple sugar before it can be released into the bloodstream. This conversion is accomplished by enzymic action.

Many more examples of autolysis could be given, but enough have been presented to convince the reader that it is a common fact of everyday life. It remains now to show that the body possesses control over this process, just as it does over all the other processes of life: that the process is not a blind, undirected bull-in-a-china-shop affair.

A remarkable example of this control is afforded by the piece of diced plenarium that contains the pharynx. Here is manifest the ability to tear down a part and shift its constituent materials. The same thing is seen in the softening and absorption of the bone-ring support around a point of fracture. Only part of the bone-ring is digested, the remainder is allowed to remain to reinforce the weakened structure.

The phenomena of fasting supply many examples of the control the body exercises over its autolytic processes. For instance, tissues are lost in the inverse order of their usefulness—fat and morbid growths first, and then the other issues. In all animals, from worms to man, the various organs and tissues differ very greatly in their rates of loss while fasting. Usually the liver loses more in weight relative to the rest of the body than the other organs, especially in the earlier stages, due to the loss of glycogen and fat. The lungs lose almost nothing and the brain and nervous system still less.

The vital tissues are fed on the stored reserves and the less vital tissues, so that abstinence from food can produce damage only after the body's reserves have been exhausted.

The body possesses the ability to shift its chemicals and fasting furnishes many remarkable instances of this. The digestion and reorganization of parts seen in worms and other animals, when deprived of food, the digestion and redistribution of reserves and surpluses and nonvital tissues, as seen in all animals, when forced to go without food, constitute, for the writer, some of the most marvelous phenomena in the whole realm of biology.

The body is not only able to build tissue; it can also destroy tissue. It can not only distribute its nutritive supplies; it can also redistribute them. Autoloysis makes redistribution possible.

I propose now to show the reader that this process of autolysis can be put to great practical use and be made to serve us in getting rid of tumors and other growths in the body. This fact is not exactly new for it has been known for a long time. Over a hundred years ago, Sylvester Graham wrote that when more food is used by the body than is daily supplied, "it is a general law of the vital economy" that "the decomposing absorbents (the old term for the process of autolysis) always first lay hold of and remove those substances which are of least use to the economy; and hence, all morbid accumulations, such as wens, tumors, abscesses, etc., are rapidly diminished and often wholly removed under severe and protracted abstinence and fasting."

To fully understand this, it is necessary for the reader to know that tumors are made up of flesh and blood and bone. There are many names for the different kinds of tumors, but the names of all indicate the kind of tissue of which the tumor is composed. For instance, an osteoma is made up of bone tissue; a myoma is composed of muscular tissue; a neuroma is constituted of nerve tissue; a lipoma consists of fatty tissue; etc.

Tumors being composed of tissues, the same kinds of tissues as the other structures of the body, are susceptible of autolytic distintegration, the same as normal tissue, and do, as a matter of experience, undergo dissolution and absorption under a variety of circumstances but especially during a fast. The reader who can understand how fasting reduces the amount of fat on the body and how it reduces the size of the muscles, can also understand how it will reduce the size of a tumor, or cause it to disappear altogether. He needs, then only to realize that the process of distintegrating (autolyzing) the tumor takes place much more rapidly than it does in the normal tissues.

In his *Notes on Tumors*, a work for students of pathology, Francis Carter Wood says: "In a very small proportion of human malignant tumors spontaneous disappearance for longer or shorter periods has been

noted. The greatest number of such disappearances has followed incomplete surgical removal of the tumor; they have occurred next in order of frequency during some acute febrile process, and less frequently in connection with some profound alteration of the metabolic processes of the organism, such as extreme cachexia, artificial menopause or the puerperium.

No more profound change in metabolism is possible than that produced by fasting and the change is of a character best suited to bring about the autolysis of a tumor, malignant or otherwise.

The conditions Dr. Wood mentions as causing spontaneous disappearance of tumors are, for the most part, "accidents" and are not within the range of voluntary control. Fasting, on the other hand, may be instituted and carried on under control and at any time desired. It is the rule that operations are followed by increased growth in the tumor. Spontaneous disappearance following incomplete removal is rare. The same may be said for extreme cachexia and artificial menopause. In fevers, we have rapid autolysis in many tissues of the body and much curative work going on, but we cannot develop a fever at will. Pregnancy and childbirth occasion many profound changes in the body, but they are certainly not to be recommended to sick women as cures for their tumors. Even if this were desirable, it would be a hit-or-miss remedy. The effects of fasting are certain. There is nothing hit-or-miss about the process. It works always in the same general direction.

Fever is a curative process and does help to remove the cause of the tumor. None of Dr. Wood's other causes of spontaneous disappearance assist in removing the cause of tumors. Fasting does assist greatly in the removal of such cause.

During the fast, the accumulations of superfluous tissues are overhauled and analyzed; the available component parts are turned over to the department of nutrition to be utilized in nourishing the essential tissues; the refuse is thoroughly and permanently removed.

I could quote numerous men of wide experience with fasting to corroborate what I am going to say about autolyzing tumors, but I do not desire to weary any reader with quotations. I will content myself with one quotation. Mr. Macfadden says: "My experience of fasting has shown me beyond all possible doubt that a foreign growth of any kind can be absorbed into the circulation by simply compelling the body to use every unnecessary element contained within it for food. When a foreign growth has become hardened, sometimes one long fast will not accomplish the result, but where they are soft, the fast will usually cause them to be absorbed."

Due to a variety of circumstances, some known, others unknown, the rate of absorption of tumors in fasting individuals varies. Let me cite two extreme cases to show the wide range of variation in this process.

A woman, under forty, had a uterine fibroid about the size of an average grapefruit. It was completely absorbed in twenty-eight days of total abstinence from all food but water. This was an unusually rapid rate of absorption.

Another case is that of a similar tumor in a woman of about the same age. In this case, the growth was about the size of a goose egg. One fast of twenty-one days reduced the tumor to the size of an English walnut. The fast was broken due to the return of hunger. Another fast a few weeks subsequent, of seventeen days, was required to complete the absorption of the tumor. This was an unusually slow rate of tumor absorption.

Tumor-like lumps in female breasts ranging from the size of a pea to that of a goose egg will disappear in from three days to as many weeks. Here is a remarkable case of this kind that will prove both interesting and instructive to the reader.

A young lady, age 21, had a large hard lump—a little smaller than a billiard ball—in her right breast. For four months it had caused her considerable pain. Finally she consulted a physician who diagnosed the condition, cancer, and urged immediate removal. She went to another, end another and still another physician, and each made the same diagnosis (an unusual thing) and each urged immediate removal.

Instead of resorting to surgery, the young lady resorted to lasting and in exactly three days without food, the "cancer" and all its attendant pain were gone.

There has been no recurrence in thirteen years and I feel that we are justified in considering the condition "cured." Hundreds of such occurrences under fasting have convinced us that many "tumors" and "cancers" are removed by surgeons that are not tumors or cancers. They cause us to be very skeptical of the statistics issued to show that early operation prevents or "cures" cancer.

The removal of tumors by autolysis has several advantages over their surgical removal. Surgery is always dangerous; autolysis is a physiological process and carries no danger. Surgery always lowers vitality and thus adds to the metabolic perversion that is back of the tumor. Fasting, by which autolysis of tumors is accelerated, normalizes nutrition and permits the elimination of accumulated toxins, thus helping to remove the cause of the tumor. After surgical removal, tumors tend to recur. After their autolytic removal, there is little tendency to recurrence. Tumors often recur in malignant form after their operative removal. The tendency to malignancy is removed by fasting, in Europe and America literally thousands of tumors have been autolyzed during the past fifty years, and the effectiveness of the method is beyond doubt. The present writer can give no definite information about bone tumors and nerve tumors; but, since these are subject to the same laws of nutrition as all other tumors, he is disposed to think they may be autolyzed as effectually as other tumors. These things are certain—the process has its limitations and tumors that have been allowed to grow to enormous sizes will only be reduced in size; while, not all cysts will be thus absorbed. It is advisable, therefore, to undergo the needed fast or fasts while the tumor or cyst is comparatively small.

One other limitation must be noted; namely, tumors that are so situated that they dam up the lymph stream will continue to grow (feeding upon the accumulated excess of lymph behind them) despite fasting.

Reprinted from Health For All

Article #2: Some Prefer Cancer By Lewis E. Machatka

A surgeon from Ohio State University, Dr. John F. Minton, has given his female patients a choice to either give up coffee drinking or undergo surgery to remove breast lumps. He gave 47 women the choice of abandoning coffee or going under the surgeon's knife. The breast lumps disappeared after two months in one woman who decided to give up the caffeine habit.

The cancer-causing culprits are known as methylated xanthines. These chemicals are found in conjunction with caffeine in coffee, tea, colas and cocoa. They cause the speedy growth of fibrous protective tissues, known as tumors. These chemicals also interfere with the functioning of certain tissue enzymes needed for tissue building and cell metabolism.

These fibrous tissues sometimes grow into massive lumps. They are not usually cancerous, but the women who develop them are four times more likely to develop malignant growths. It is also suspected that methylxanthines may cause prostate enlargement. The tissue of the prostate gland is similar to that of the breast, but fibrous growths on the prostate are much harder to detect.

These are some of the preliminary results of continuing research. It is clear that a word of caution has been sounded to all coffee, tea, cola, and cocoa drinkers.

It appears that the elimination of these caffeine products may be "hard medicine to swallow," as of the 47 women who had a choice of either giving up coffee or undergoing surgery, 27 preferred the

operation. Those 27 have a surprise in store. By continuing the intake of caffeine-related carcinogens, they'll merely cause cancer somewhere else in their bodies.

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Article #3: Black Pepper Causes Cancer!

Confirmation of Life Science's teaching that anything taken into the body that is not a food is poisonous and harmful comes from the research laboratory of the University of Kentucky.

Life Science teaches not to use condiments on, in or with our foods—or by themselves. In fact, we teach to eat only foods that are a gustatory delight in themselves. For good health we must eat only those foods that don't call for the addition of seasonings or spices of any sort. Foods and so-called foods that have to be jazzed up with condiments are unhealthful.

When black pepper was given to mice at the University of Kentucky, they developed problems aplenty, including cancer of the liver, lungs and skin. This is a prime example of how toxic condiments really are. Cayenne pepper, chili powder, salt, basil, cumin seed, caraway, vinegar, garlic.In cases where complete absorption is not obtained, the and hundreds of other condiments (herbs, seasonings, tumor is sufficiently reduced in size to not constitute a menace. Thereafter, proper living will prevent added growth. Indeed, we have seen a number of cases where a further decrease in size followed right living subsequent to fasting. Spices are likewise pathogenic and carcinogenic.

To attain and maintain health, you need to drop condiments from your life—forever. Eat only fresh raw succulent fruits, vegetables, nuts, seeds and sprouts. The better your diet, the better you'll look and feel.

Reprinted from Health Crusader April 1980

Article #4: Ten Commandments of Cancer Prevention

Dr. Michael B. Shinkin, formerly with the National Cancer Institute, has formulated the following ten commandments for cancer prevention. Our comments will follow but we do think that Dr. Shinkin's commandments bear repetition for health-conscious individuals:

1. Do not smoke tobacco or substitutes. (Cigarette smoking may be responsible for as much as 50% of the cancer in males, according to some experts, and a smaller, but significant percentage in women. Smoking marijuana may also cause cancer.)
2. Do not drink alcohol. (Alcohol in excess is believed to promote tumor formation.)
3. Eat sparingly a "prudent diet." (Too great a calorie intake and an excessive fat consumption have been associated with a higher incidence of some cancers.)
4. Avoid unnecessary X rays. (Shinkin emphasized the word "unnecessary.")
5. Avoid excessive sun exposure. (Sunbathing has been linked to an increased rate of skin cancer.)
6. Avoid inappropriate drug intake. (Some medications are suspected of being carcinogenic.)
7. In the work place, avoid or minimize contact with irritants.

8. At work, avoid or minimize swallowing foreign materials.
9. Avoid or minimize breathing foreign materials.
10. Use appropriate protective measures and devices while working.

These commandments appeared in conjunction with an article in the *Los Angeles Times* headlined "Cancer War Making Slow Progress." The fact that it is not going to make any progress is highlighted by this quotation which says, in effect, medical people are completely baffled by it: "But although 44% of the National Cancer Institute budget goes toward basic research, a basic understanding of the cause of cancer is decades away, according to some scientists."

This quotation sums up the results of the medical approach: "So far, after 50 years of cold war and 10 years of highly-publicized warfare, no major inroads have been made into the overall death rate from cancer." Both cancer deaths and the cancer death rate are now the highest in history and are getting even higher.

These ten commandments for cancer prevention should be labeled *ten prominent causes of cancer*, for most of the strictures deal with carcinogens. Cancer does not have to be prevented—it has to be caused and subjecting ourselves to carcinogens is definitely cancer causing. One commandment has to do with sunshine. This will not cause cancer except in the toxemic. And the toxemic condition must get the blame for the cancer, not the sunshine. Sunshine is a healthful influence, not a pathogenic factor.

Tobacco, coffee, salt, herbs, teas, hot foods—anything that continually poisons or interferes with our body processes (such as hot stuff down the esophagus)—can evolve into cancer.

Do not drink alcohol. This should also apply to anything and everything except pure water and only the most wholesome of liquid foods (juices). Vinegar is a first cousin to alcohol and is carcinogenic. So are teas, coffees, and hot drinks of all descriptions.

Eat sparingly. Yes, overeating will cause cancer but of the foods Dr. Shinkin refers to, even a sparing diet is cancer causing. Animal fats, hydrogenated and/or heated vegetable fats, fried foods and biologically-incorrect foods are all carcinogenic.

Avoid inappropriate drug intake. We must recognize that *all* drug intake is inappropriate because all drugs are carcinogenic.

The simplicity of *cancer prevention* is that it will not happen unless caused. We must either cause it ourselves or subject ourselves to causes. If we say let nothing into your body but those essential elements and influences for great health, we automatically exclude everything that is abnormal to the body. So we can be like little children in avoiding and resisting *medicines, chemicals, foreign materials* and so on. It's our well-being and we'd do well to heed our inner wisdom in taking care of ourselves.

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